



# UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 3 Environmental Science Center  
Office of Analytical Services and Quality Assurance  
701 Mapes Road  
Fort Meade, Maryland 20755-5350



## Report Narrative

The EPA Region 3 Laboratory's Quality System is NELAP accredited. The National Environmental Laboratory Accreditation Program (NELAP) is a voluntary environmental laboratory accreditation association of State and Federal agencies

### **General Notes: EDIT**

This report contains results for Metals and Glycols analyses only. All other parameters identified on the chain-of-custody form are included in separate reports. Lab Sample numbers 120101 thru - and 1201013- thru - are not included in this report since these samples were designated for Volatile Organic analysis only.

For Work Order 1202001 - **This is Report 1 of 3.**

All samples were received intact and at proper temperature. EDIT

Some samples designated for the analysis of Orthophosphorous were received at the laboratory past the established holding times. Therefore, all samples were analyzed using the Total Phosphate method and results for the analysis by the Orthophosphorous method are not included in this report. Since the Orthophosphorous method was being used as a screening method to determine the need to analyze the sample by the Total Phosphate method, results for Total Phosphate are not impacted.

Samples designated for the analysis of Oil & Grease were received in sample containers inconsistent with the type needed for the routine extraction procedure. Therefore, all samples were extracted using the manual extraction technique

Where applicable, sample results are qualified based on the highest level concentrations of field QC contamination found in the field, equipment, or trip blanks.

### **Metals Analysis Note:**

Uranium, strontium, lithium, tin and titanium were analyzed as an on-demand analysis.

Metals sample results were qualified with a B because of contamination of copper, lead and zinc in the field blanks.

### **Glycols by HPLC/MS/MS Note:**

Samples were analyzed for diethylene glycol (DiG) (CAS# 111-46-6), triethylene glycol (TriG) (112-27-6), tetraethylene glycol (TeG) (112-60-7), 2-butoxyethanol (2-Bu) (111-76-2) and 2-methoxyethanol (109-86-4) by HPLC/MS/MS (inst id: TQD-LCMSMS) on a Waters Atlantis dC18 3um 2.1 x 150mm column (s/n- 0141301481). See the case file for complete instrument method information.

An HPLC/MS/MS method does not currently exist for these analytes. ASTM D 7731-11 and EPA SW-846 Methods 8000C and 8321 were followed for method development and QA/QC limits where applicable. All applicable OASQA On Demand QA/QC protocols were followed.

The aqueous samples were injected without extraction onto the HPLC/MS/MS system

Refer to notes in the case file for additional information regarding the analysis

**REPORT 1 of 3**

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Site Name: Dimock Residential Groundwater

Project #: DAS R33907

## ANALYTICAL REPORT FOR SAMPLES

Station ID	Laboratory ID	Matrix	Date Sampled	Date Received
HW42	1202001-01	Drinking Water	02/02/12 10:28	02/3/12 11:00
HW42-F	1202001-02	Drinking Water	02/02/12 10:28	02/3/12 11:00
HW46	1202001-03	Drinking Water	02/02/12 11:39	02/3/12 11:00
HW46-F	1202001-04	Drinking Water	02/02/12 11:39	02/3/12 11:00
HW46-P	1202001-05	Drinking Water	02/02/12 11:24	02/3/12 11:00
FB09	1202001-07	Water	02/02/12 10:15	02/3/12 11:00
FB08	1202001-08	Water	02/01/12 14:45	02/3/12 11:00
FB08-F	1202001-09	Water	02/01/12 14:45	02/3/12 11:00
HW34a	1202001-10	Drinking Water	02/01/12 15:47	02/3/12 11:00
HW34a-F	1202001-11	Drinking Water	02/01/12 10:45	02/3/12 11:00
FB09-F	1202001-12	Water	02/02/12 10:15	02/3/12 11:00
HW42z	1202001-13	Drinking Water	02/02/12 10:29	02/3/12 11:00
HW42z-F	1202001-14	Drinking Water	02/02/12 10:29	02/3/12 11:00
HW46-PF	1202001-16	Drinking Water	02/02/12 11:24	02/3/12 11:00
HW34a-P	1202001-17	Drinking Water	02/01/12 15:55	02/3/12 11:00
HW34a-PF	1202001-18	Drinking Water	02/01/12 15:55	02/3/12 11:00
HW28a	1202001-20	Drinking Water	02/03/12 11:49	02/4/12 11:10
HW28a-F	1202001-21	Drinking Water	02/03/12 11:49	02/4/12 11:10
HW28a-P	1202001-22	Drinking Water	02/03/12 11:52	02/4/12 11:10
HW39	1202001-23	Drinking Water	02/03/12 10:42	02/4/12 11:10
HW39-P	1202001-24	Drinking Water	02/03/12 11:13	02/4/12 11:10
HW39-PF	1202001-25	Drinking Water	02/03/12 11:13	02/4/12 11:10
HW40	1202001-26	Drinking Water	02/02/12 15:39	02/4/12 11:10
HW40-F	1202001-27	Drinking Water	02/02/12 15:39	02/4/12 11:10
HW40-P	1202001-28	Drinking Water	02/02/12 15:44	02/4/12 11:10
HW40-PF	1202001-29	Drinking Water	02/02/12 15:44	02/4/12 11:10

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Station ID	Laboratory ID	Matrix	Date Sampled	Date Received
HW41	1202001-30	Drinking Water	02/02/12 16:12	02/4/12 11:10
HW41-F	1202001-31	Drinking Water	02/02/12 16:12	02/4/12 11:10
HW41-P	1202001-32	Drinking Water	02/02/12 15:54	02/4/12 11:10
HW41-PF	1202001-33	Drinking Water	02/02/12 15:54	02/4/12 11:10
HW28b-PF	1202001-37	Drinking Water	02/03/12 14:27	02/6/12 16:40
HW28a-PF	1202001-38	Drinking Water	02/03/12 11:52	02/6/12 16:40
HW39-F	1202001-39	Drinking Water	02/03/12 10:42	02/6/12 16:40
HW09-PF	1202001-40	Drinking Water	02/03/12 15:16	02/6/12 16:40
FB10-F	1202001-41	Water	02/03/12 14:09	02/6/12 16:40
HW09-F	1202001-42	Water	02/03/12 15:20	02/6/12 16:40
HW28b-P	1202001-43	Drinking Water	02/03/12 14:27	02/6/12 16:40
HW09	1202001-44	Drinking Water	02/03/12 15:20	02/6/12 16:40
HW09-P	1202001-45	Drinking Water	02/03/12 15:16	02/6/12 16:40
FB10	1202001-46	Water	02/03/12 14:09	02/6/12 16:40
HW39-RO	1202001-51	Water	02/03/12 11:01	02/6/12 16:40



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## Total Metals

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
<b>Lab ID:</b> 1202001-01								
<b>Station ID:</b> HW42								
<b>Sample Matrix:</b> Drinking Water								
<b>Collected:</b> 02/02/2012								
Mercury	U		0.2	ug/L	1	02/09/12	02/10/12 10:49	EPA 245.1/R3QA131
<b>Lab ID:</b> 1202001-02								
<b>Station ID:</b> HW42-F								
<b>Sample Matrix:</b> Drinking Water								
<b>Collected:</b> 02/02/2012								
Mercury	U		0.2	ug/L	1	02/09/12	02/10/12 10:53	EPA 245.1/R3QA131
<b>Lab ID:</b> 1202001-03								
<b>Station ID:</b> HW46								
<b>Sample Matrix:</b> Drinking Water								
<b>Collected:</b> 02/02/2012								
Mercury	U		0.2	ug/L	1	02/09/12	02/10/12 10:57	EPA 245.1/R3QA131
<b>Lab ID:</b> 1202001-04								
<b>Station ID:</b> HW46-F								
<b>Sample Matrix:</b> Drinking Water								
<b>Collected:</b> 02/02/2012								
Mercury	U		0.2	ug/L	1	02/09/12	02/10/12 10:59	EPA 245.1/R3QA131
<b>Lab ID:</b> 1202001-05								
<b>Station ID:</b> HW46-P								
<b>Sample Matrix:</b> Drinking Water								
<b>Collected:</b> 02/02/2012								
Mercury	U		0.2	ug/L	1	02/09/12	02/10/12 11:01	EPA 245.1/R3QA131



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Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1202001-07							
Station ID:	FB09							
Sample Matrix:	Water							
Collected:	02/02/2012							
Mercury	U		0.2	ug/L	1	02/09/12	02/10/12 11:07	EPA 245.1/R3QA131
Lab ID:	1202001-08							
Station ID:	FB08							
Sample Matrix:	Water							
Collected:	02/01/2012							
Mercury	U		0.2	ug/L	1	02/09/12	02/10/12 11:09	EPA 245.1/R3QA131
Lab ID:	1202001-09							
Station ID:	FB08-F							
Sample Matrix:	Water							
Collected:	02/01/2012							
Mercury	U		0.2	ug/L	1	02/09/12	02/10/12 11:11	EPA 245.1/R3QA131
Lab ID:	1202001-10							
Station ID:	HW34a							
Sample Matrix:	Drinking Water							
Collected:	02/01/2012							
Mercury	U		0.2	ug/L	1	02/09/12	02/10/12 11:13	EPA 245.1/R3QA131
Lab ID:	1202001-11							
Station ID:	HW34a-F							
Sample Matrix:	Drinking Water							
Collected:	02/01/2012							
Mercury	U		0.2	ug/L	1	02/09/12	02/10/12 11:15	EPA 245.1/R3QA131



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Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1202001-12							
Station ID:	FB09-F							
Sample Matrix:	Water							
Collected:	02/02/2012							
Mercury	U		0.2	ug/L	1	02/09/12	02/10/12 11:18	EPA 245.1/R3QA131
Lab ID:	1202001-13							
Station ID:	HW42z							
Sample Matrix:	Drinking Water							
Collected:	02/02/2012							
Mercury	U		0.2	ug/L	1	02/09/12	02/10/12 11:20	EPA 245.1/R3QA131
Lab ID:	1202001-14							
Station ID:	HW42z-F							
Sample Matrix:	Drinking Water							
Collected:	02/02/2012							
Mercury	U		0.2	ug/L	1	02/09/12	02/10/12 11:22	EPA 245.1/R3QA131
Lab ID:	1202001-16							
Station ID:	HW46-PF							
Sample Matrix:	Drinking Water							
Collected:	02/02/2012							
Mercury	U		0.2	ug/L	1	02/09/12	02/10/12 11:24	EPA 245.1/R3QA131
Lab ID:	1202001-17							
Station ID:	HW34a-P							
Sample Matrix:	Drinking Water							
Collected:	02/01/2012							
Mercury	U		0.2	ug/L	1	02/09/12	02/10/12 11:30	EPA 245.1/R3QA131



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## Total Metals

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
<b>Lab ID:</b> 1202001-18 <b>Station ID:</b> HW34a-PF <b>Sample Matrix:</b> Drinking Water <b>Collected:</b> 02/01/2012								
Mercury	U		0.2	ug/L	1	02/09/12	02/10/12 11:34	EPA 245.1/R3QA131
<b>Lab ID:</b> 1202001-20 <b>Station ID:</b> HW28a <b>Sample Matrix:</b> Drinking Water <b>Collected:</b> 02/03/2012								
Mercury	U		0.2	ug/L	1	02/09/12	02/10/12 11:38	EPA 245.1/R3QA131
<b>Lab ID:</b> 1202001-21 <b>Station ID:</b> HW28a-F <b>Sample Matrix:</b> Drinking Water <b>Collected:</b> 02/03/2012								
Mercury	U		0.2	ug/L	1	02/09/12	02/10/12 11:40	EPA 245.1/R3QA131
<b>Lab ID:</b> 1202001-22 <b>Station ID:</b> HW28a-P <b>Sample Matrix:</b> Drinking Water <b>Collected:</b> 02/03/2012								
Mercury	U		0.2	ug/L	1	02/09/12	02/10/12 11:42	EPA 245.1/R3QA131
<b>Lab ID:</b> 1202001-23 <b>Station ID:</b> HW39 <b>Sample Matrix:</b> Drinking Water <b>Collected:</b> 02/03/2012								
Mercury	U		0.2	ug/L	1	02/15/12	02/16/12 10:44	EPA 245.1/R3QA131



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Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1202001-24							
Station ID:	HW39-P							
Sample Matrix:	Drinking Water							
Collected:	02/03/2012							
Mercury	U		0.2	ug/L	1	02/15/12	02/16/12 10:48	EPA 245.1/R3QA131
Lab ID:	1202001-25							
Station ID:	HW39-PF							
Sample Matrix:	Drinking Water							
Collected:	02/03/2012							
Mercury	U		0.2	ug/L	1	02/15/12	02/16/12 10:52	EPA 245.1/R3QA131
Lab ID:	1202001-26							
Station ID:	HW40							
Sample Matrix:	Drinking Water							
Collected:	02/02/2012							
Mercury	U		0.2	ug/L	1	02/15/12	02/16/12 10:54	EPA 245.1/R3QA131
Lab ID:	1202001-27							
Station ID:	HW40-F							
Sample Matrix:	Drinking Water							
Collected:	02/02/2012							
Mercury	U		0.2	ug/L	1	02/15/12	02/16/12 10:56	EPA 245.1/R3QA131
Lab ID:	1202001-28							
Station ID:	HW40-P							
Sample Matrix:	Drinking Water							
Collected:	02/02/2012							
Mercury	U		0.2	ug/L	1	02/15/12	02/16/12 11:02	EPA 245.1/R3QA131





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Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1202001-29							
Station ID:	HW40-PF							
Sample Matrix:	Drinking Water							
Collected:	02/02/2012							
Mercury	U		0.2	ug/L	1	02/15/12	02/16/12 11:04	EPA 245.1/R3QA131
Lab ID:	1202001-30							
Station ID:	HW41							
Sample Matrix:	Drinking Water							
Collected:	02/02/2012							
Mercury	U		0.2	ug/L	1	02/15/12	02/16/12 11:06	EPA 245.1/R3QA131
Lab ID:	1202001-31							
Station ID:	HW41-F							
Sample Matrix:	Drinking Water							
Collected:	02/02/2012							
Mercury	U		0.2	ug/L	1	02/15/12	02/16/12 11:08	EPA 245.1/R3QA131
Lab ID:	1202001-32							
Station ID:	HW41-P							
Sample Matrix:	Drinking Water							
Collected:	02/02/2012							
Mercury	U		0.2	ug/L	1	02/15/12	02/16/12 11:10	EPA 245.1/R3QA131
Lab ID:	1202001-33							
Station ID:	HW41-PF							
Sample Matrix:	Drinking Water							
Collected:	02/02/2012							
Mercury	U		0.2	ug/L	1	02/13/12	02/14/12 11:56	EPA 245.1/R3QA131



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## Total Metals

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
<b>Lab ID:</b> 1202001-37 <b>Station ID:</b> HW28b-PF <b>Sample Matrix:</b> Drinking Water <b>Collected:</b> 02/03/2012								
Mercury	U		0.2	ug/L	1	02/13/12	02/14/12 12:00	EPA 245.1/R3QA131
<b>Lab ID:</b> 1202001-38 <b>Station ID:</b> HW28a-PF <b>Sample Matrix:</b> Drinking Water <b>Collected:</b> 02/03/2012								
Mercury	U		0.2	ug/L	1	02/13/12	02/14/12 12:08	EPA 245.1/R3QA131
<b>Lab ID:</b> 1202001-39 <b>Station ID:</b> HW39-F <b>Sample Matrix:</b> Drinking Water <b>Collected:</b> 02/03/2012								
Mercury	U		0.2	ug/L	1	02/13/12	02/14/12 12:10	EPA 245.1/R3QA131
<b>Lab ID:</b> 1202001-40 <b>Station ID:</b> HW09-PF <b>Sample Matrix:</b> Drinking Water <b>Collected:</b> 02/03/2012								
Mercury	U		0.2	ug/L	1	02/13/12	02/14/12 12:12	EPA 245.1/R3QA131
<b>Lab ID:</b> 1202001-41 <b>Station ID:</b> FB10-F <b>Sample Matrix:</b> Water <b>Collected:</b> 02/03/2012								
Mercury	U		0.2	ug/L	1	02/13/12	02/14/12 12:14	EPA 245.1/R3QA131



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## Total Metals

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
<b>Lab ID:</b> 1202001-42								
<b>Station ID:</b> HW09-F								
<b>Sample Matrix:</b> Water								
<b>Collected:</b> 02/03/2012								
Mercury	U		0.2	ug/L	1	02/13/12	02/14/12 12:16	EPA 245.1/R3QA131
<b>Lab ID:</b> 1202001-43								
<b>Station ID:</b> HW28b-P								
<b>Sample Matrix:</b> Drinking Water								
<b>Collected:</b> 02/03/2012								
Mercury	U		0.2	ug/L	1	02/13/12	02/14/12 12:18	EPA 245.1/R3QA131
<b>Lab ID:</b> 1202001-44								
<b>Station ID:</b> HW09								
<b>Sample Matrix:</b> Drinking Water								
<b>Collected:</b> 02/03/2012								
Mercury	U		0.2	ug/L	1	02/13/12	02/14/12 12:20	EPA 245.1/R3QA131
<b>Lab ID:</b> 1202001-45								
<b>Station ID:</b> HW09-P								
<b>Sample Matrix:</b> Drinking Water								
<b>Collected:</b> 02/03/2012								
Mercury	U		0.2	ug/L	1	02/13/12	02/14/12 12:28	EPA 245.1/R3QA131
<b>Lab ID:</b> 1202001-46								
<b>Station ID:</b> FB10								
<b>Sample Matrix:</b> Water								
<b>Collected:</b> 02/03/2012								
Mercury	U		0.2	ug/L	1	02/13/12	02/14/12 12:32	EPA 245.1/R3QA131



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## Total Metals

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1202001-51							
Station ID:	HW39-RO							
Sample Matrix:	Water							
Collected:	02/03/2012							
Mercury	U		0.2	ug/L	1	02/13/12	02/14/12 12:34	EPA 245.1/R3QA131



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QC Data  
Total Metals

Analyte	Result	Quantitation Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch BB20704 - Mercury 245.1/245.2/7470a Prep</b>										
<b>Blank (BB20704-BLK1)</b>				Prepared: 02/09/12 09:30		Analyzed: 02/10/12 10:43				
Mercury	U	0.2	ug/L							
<b>Blank (BB20704-BLK2)</b>				Prepared: 02/09/12 09:30		Analyzed: 02/10/12 11:17				
Mercury	U	0.2	ug/L							
<b>LCS (BB20704-BS1)</b>				Prepared: 02/09/12 09:30		Analyzed: 02/10/12 10:45				
Mercury	1.791	0.2	ug/L	2.0000		90	85-115			
<b>Duplicate (BB20704-DUP1)</b>				Source: 1202001-01		Prepared: 02/09/12 09:30		Analyzed: 02/10/12 10:51		
Mercury	U	0.2	ug/L		U				20	
<b>Duplicate (BB20704-DUP2)</b>				Source: 1202001-17		Prepared: 02/09/12 09:30		Analyzed: 02/10/12 11:32		
Mercury	U	0.2	ug/L		U				20	
<b>Matrix Spike (BB20704-MS1)</b>				Source: 1202001-02		Prepared: 02/09/12 09:30		Analyzed: 02/10/12 10:55		
Mercury	1.819	0.2	ug/L	2.0000	U	91	70-130			
<b>Matrix Spike (BB20704-MS2)</b>				Source: 1202001-18		Prepared: 02/09/12 09:30		Analyzed: 02/10/12 11:36		
Mercury	1.725	0.2	ug/L	2.0000	U	86	70-130			
<b>Batch BB20904 - Mercury 245.1/245.2/7470a Prep</b>										
<b>Blank (BB20904-BLK1)</b>				Prepared: 02/13/12 10:16		Analyzed: 02/16/12 10:38				
Mercury	U	0.2	ug/L							
<b>Blank (BB20904-BLK2)</b>				Prepared: 02/13/12 10:16		Analyzed: 02/14/12 11:54				
Mercury	U	0.2	ug/L							



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QC Data  
Total Metals

Analyte	Result	Quantitation Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch BB20904 - Mercury 245.1/245.2/7470a Prep</b>										
<b>Blank (BB20904-BLK3)</b>				Prepared: 02/13/12 10:16		Analyzed: 02/14/12 14:36				
Mercury	U	0.2	ug/L							
<b>LCS (BB20904-BS1)</b>				Prepared: 02/13/12 10:16		Analyzed: 02/16/12 10:40				
Mercury	1.863	0.2	ug/L	2.0000		93	85-115			
<b>LCS (BB20904-BS2)</b>				Prepared: 02/13/12 10:16		Analyzed: 02/14/12 12:40				
Mercury	1.97	0.2	ug/L	2.0000		98	85-115			
<b>Duplicate (BB20904-DUP1)</b>				Source: 1202001-23		Prepared: 02/13/12 10:16		Analyzed: 02/16/12 10:46		
Mercury	U	0.2	ug/L		U				20	
<b>Duplicate (BB20904-DUP2)</b>				Source: 1202001-33		Prepared: 02/13/12 10:16		Analyzed: 02/14/12 11:58		
Mercury	0.0273	0.2	ug/L		0.0268			2	20	
<b>Duplicate (BB20904-DUP3)</b>				Source: 1202001-44		Prepared: 02/13/12 10:16		Analyzed: 02/14/12 12:26		
Mercury	U	0.2	ug/L		U				20	
<b>Matrix Spike (BB20904-MS1)</b>				Source: 1202001-24		Prepared: 02/13/12 10:16		Analyzed: 02/16/12 10:50		
Mercury	1.821	0.2	ug/L	2.0000	U	91	70-130			
<b>Matrix Spike (BB20904-MS2)</b>				Source: 1202001-37		Prepared: 02/13/12 10:16		Analyzed: 02/14/12 12:02		
Mercury	1.959	0.2	ug/L	2.0000	0.0305	96	70-130			
<b>Matrix Spike (BB20904-MS3)</b>				Source: 1202001-45		Prepared: 02/13/12 10:16		Analyzed: 02/14/12 12:30		
Mercury	2.015	0.2	ug/L	2.0000	U	101	70-130			



# UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 3 Environmental Science Center  
Office of Analytical Services and Quality Assurance  
701 Mapes Road  
Fort Meade, Maryland 20755-5350



**Site Name: Dimock Residential Groundwater**

**Project #: DAS R33907**

## Notes and Definitions

%REC Percent Recovery

RPD Relative Percent Difference

U Analyte included in the analysis, but not detected at or above the quantitation limit.

**Quantitation Limit:** The lowest concentration of an analyte that can be reliably measured within specified limits of precision and accuracy for a specific laboratory analytical method and that takes into account analytical adjustments made during sample preparation and analysis

**REPORTING PROTOCOL FOR SOLID SAMPLE RESULTS:** Percent Solids (percent dry wt at 105 degrees C) determinations are routinely performed for most organic and inorganic analyses. Consequently, these samples are analyzed wet and converted to a dry weight result for reporting purposes. If metals and mercury analyses are requested, they are routinely prepared for analyses by an initial drying at 60 degrees C, homogenized prior to digestion, and are analyzed and reported on a dry weight basis. Oil-type samples are analyzed and reported on a wet weight basis for all analyses because of the nature of the sample matrix. Any exceptions to this protocol will be noted in the narrative.



## UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 3 Environmental Science Center  
Office of Analytical Services and Quality Assurance  
701 Mapes Road  
Fort Meade, Maryland 20755-5350



## Items for Project Manager Review

LabNumber	Analysis	Analyte	Exception
	Total Mercury by 245.1	(Water)	Special Units: (ug/L)
1202001-01	Total Mercury by 245.1		Status is Analyzed
1202001-02	Total Mercury by 245.1		Status is Analyzed
1202001-03	Total Mercury by 245.1		Status is Analyzed
1202001-04	Total Mercury by 245.1		Status is Analyzed
1202001-05	Total Mercury by 245.1		Status is Analyzed
1202001-07	Total Mercury by 245.1		Status is Analyzed
1202001-08	Total Mercury by 245.1		Status is Analyzed
1202001-09	Total Mercury by 245.1		Status is Analyzed
1202001-10	Total Mercury by 245.1		Status is Analyzed
1202001-11	Total Mercury by 245.1		Status is Analyzed
1202001-12	Total Mercury by 245.1		Status is Analyzed
1202001-13	Total Mercury by 245.1		Status is Analyzed
1202001-14	Total Mercury by 245.1		Status is Analyzed
1202001-16	Total Mercury by 245.1		Status is Analyzed
1202001-17	Total Mercury by 245.1		Status is Analyzed
1202001-18	Total Mercury by 245.1		Status is Analyzed
1202001-20	Total Mercury by 245.1		Status is Analyzed
1202001-21	Total Mercury by 245.1		Status is Analyzed
1202001-22	Total Mercury by 245.1		Status is Analyzed
1202001-23	Total Mercury by 245.1		Status is Analyzed
1202001-24	Total Mercury by 245.1		Status is Analyzed
1202001-25	Total Mercury by 245.1		Status is Analyzed
1202001-26	Total Mercury by 245.1		Status is Analyzed
1202001-27	Total Mercury by 245.1		Status is Analyzed
1202001-28	Total Mercury by 245.1		Status is Analyzed
1202001-29	Total Mercury by 245.1		Status is Analyzed
1202001-30	Total Mercury by 245.1		Status is Analyzed
1202001-31	Total Mercury by 245.1		Status is Analyzed
1202001-32	Total Mercury by 245.1		Status is Analyzed
1202001-33	Total Mercury by 245.1		Status is Analyzed
1202001-37	Total Mercury by 245.1		Status is Analyzed
1202001-38	Total Mercury by 245.1		Status is Analyzed
1202001-39	Total Mercury by 245.1		Status is Analyzed
1202001-40	Total Mercury by 245.1		Status is Analyzed
1202001-41	Total Mercury by 245.1		Status is Analyzed
1202001-42	Total Mercury by 245.1		Status is Analyzed
1202001-43	Total Mercury by 245.1		Status is Analyzed
1202001-44	Total Mercury by 245.1		Status is Analyzed
1202001-45	Total Mercury by 245.1		Status is Analyzed
1202001-46	Total Mercury by 245.1		Status is Analyzed
1202001-51	Total Mercury by 245.1		Status is Analyzed



Tube	Sample Name	Sample Type	Weight	Volume	Dilution
S:1	Calibration Blank	Standard	1.00	1.00	1.00
S:2	Standard #1 (0.2)	Standard	1.00	1.00	1.00
S:3	Standard #2 (0.5)	Standard	1.00	1.00	1.00
S:4	Standard #3 (1.0)	Standard	1.00	1.00	1.00
S:5	Standard #4 (2.0)	Standard	1.00	1.00	1.00
S:6	Standard #5 (3.0)	Standard	1.00	1.00	1.00
S:7	Standard #6 (5.0)	Standard	1.00	1.00	1.00
S:5	ICV	ICV	1.00	1.00	1.00
S:1	ICB	ICB	1.00	1.00	1.00
1:1	LCS	LCS	1.00	1.00	1.00
S:5	CCV	CCV	1.00	1.00	1.00
S:1	CCB	CCB	1.00	1.00	1.00
1:2	Method Blank 1	Method Blank	1.00	1.00	1.00
1:3	QC Spike 1	QC Spike	1.00	1.00	1.00
1:4	0.2 std as sample	Unknown	1.00	1.00	1.00
1:5	1202001-01	Unknown	1.00	1.00	1.00
1:6	1202001-01dup	Duplicate	1.00	1.00	1.00
1:7	1202001-01 <sup>02</sup> ss 2/10/12	Unknown	1.00	1.00	1.00
1:8	1202001-02spike	Matrix Spike	1.00	1.00	1.00
1:9	1202001-03	Unknown	1.00	1.00	1.00
1:10	1202001-04	Unknown	1.00	1.00	1.00
1:11	1202001-05	Unknown	1.00	1.00	1.00
S:5	CCV	CCV	1.00	1.00	1.00
S:1	CCB	CCB	1.00	1.00	1.00
1:12	1202001-07	Unknown	1.00	1.00	1.00
1:13	1202001-08	Unknown	1.00	1.00	1.00
1:14	1202001-09	Unknown	1.00	1.00	1.00
1:15	1202001-10	Unknown	1.00	1.00	1.00
1:16	1202001-11	Unknown	1.00	1.00	1.00
1:17	Method Blank 2	Method Blank	1.00	1.00	1.00
1:18	1202001-12	Unknown	1.00	1.00	1.00
1:19	1202001-13	Unknown	1.00	1.00	1.00
1:20	1202001-14	Unknown	1.00	1.00	1.00
1:21	1202001-16	Unknown	1.00	1.00	1.00
S:5	CCV	CCV	1.00	1.00	1.00
S:1	CCB	CCB	1.00	1.00	1.00
1:22	1202001-17	Unknown	1.00	1.00	1.00
1:23	1202001-17dup	Duplicate	1.00	1.00	1.00
1:24	1202001-18	Unknown	1.00	1.00	1.00
1:25	1202001-18spike	Matrix Spike	1.00	1.00	1.00
1:26	1202001-20	Unknown	1.00	1.00	1.00
1:27	1202001-21	Unknown	1.00	1.00	1.00
1:28	1202001-22	Unknown	1.00	1.00	1.00
S:5	CCV	CCV	1.00	1.00	1.00
S:1	CCB	CCB	1.00	1.00	1.00

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Revised 6/6

Wdt 1202001  
Sufun 2/10/12



# CETAC Hg Analysis Report

Analyst: Mercury Analyzer

Worksheet file: C:\Program Files\QuickTrace\Worksheets\Dimock 6th.wsz

Date Started: 2/9/2012 9:42:33 AM

Comment:

## Results

Sample Name	Type	Date/Time	Conc (ppb)	µAbs	%RSD	Flags	Wt. ODF	Vol.
Calibration Blank	STD	02/10/12 10:19:19 am	0.0000	244	8.78		1.00 1.00	1.0
Standard #1 (0.2)	STD	02/10/12 10:21:17 am	0.2000	2949	0.27		1.00 1.00	1.0
Standard #2 (0.5)	STD	02/10/12 10:23:15 am	0.5000	7064	0.41		1.00 1.00	1.0
Standard #3 (1.0)	STD	02/10/12 10:25:14 am	1.0000	14030	0.39		1.00 1.00	1.0
Standard #4 (2.0)	STD	02/10/12 10:27:13 am	2.0000	27922	0.42		1.00 1.00	1.0
Standard #5 (3.0)	STD	02/10/12 10:29:13 am	3.0000	42003	0.61		1.00 1.00	1.0
Standard #6 (5.0)	STD	02/10/12 10:31:14 am	5.0000	69560	0.52		1.00 1.00	1.0

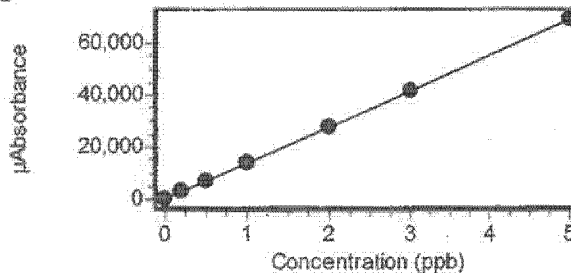
### Calibration

Equation:  $A = 183.034 + 13888.070C$

R2: 0.99999

SEE: 88.5994

Flags:



ICV	ICV	02/10/12 10:33:13 am	2.0130	28140	0.25		1.00 1.00	1.0
% Recovery 100.65								
ICB	ICB	02/10/12 10:35:10 am	0.0028	221	11.05		1.00 1.00	1.0
						<i>air bubbles in tubing</i>		
LCS	LCS	02/10/12 10:37:07 am	1.9570	27359	0.47		1.00 1.00	1.0
% Recovery 97.84								

*Dimock 10/12/2012*  
*2/10/12*

2/10/2012 11:48:14 AM

Dimock 6th.wsz

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Sample Name	Type	Date/Time	Conc (ppb)	µAbs	%RSD	Flags	Wt.	Vol. ODF
CCV	CCV	02/10/12 10:39:06 am	2.0030	28006	0.49		1.00	1.00
% Recovery 100.17							1.00	
CCB	CCB	02/10/12 10:41:03 am	-0.0005	177	1.84		1.00	1.00
							1.00	
Method Blank 1	MB	02/10/12 10:43:01 am	0.0162	408	0.87	Z	1.00	1.00
							1.00	
QC Spike 1	SPK	02/10/12 10:44:58 am	1.7910	25061	0.25		1.00	1.00
% Recovery 88.75							1.00	
0.2 std as sample	UNK	02/10/12 10:46:56 am	0.2012	2978	0.35		1.00	1.00
							1.00	
1202001-01	UNK	02/10/12 10:48:54 am	0.0175	426	0.27		1.00	1.00
							1.00	
1202001-01dup	DUP	02/10/12 10:50:53 am	0.0177	429	0.62		1.00	1.00
RPD 0.00							1.00	
1202001-01 02	UNK	02/10/12 10:52:51 am	0.0164	410	0.92		1.00	1.00
88 2/10/12							1.00	
1202001-02spike	MSK	02/10/12 10:54:51 am	1.8190	25447	0.50		1.00	1.00
% Recovery 90.14							1.00	
1202001-03	UNK	02/10/12 10:56:50 am	0.0171	420	0.73		1.00	1.00
							1.00	
1202001-04	UNK	02/10/12 10:58:49 am	0.0200	461	0.56		1.00	1.00
							1.00	
1202001-05	UNK	02/10/12 11:00:49 am	0.0156	400	0.17		1.00	1.00
							1.00	
CCV	CCV	02/10/12 11:02:49 am	1.9980	27924	0.36		1.00	1.00
% Recovery 99.88							1.00	
CCB	CCB	02/10/12 11:04:46 am	-0.0012	166	2.20		1.00	1.00
							1.00	
1202001-07	UNK	02/10/12 11:06:46 am	0.0162	408	0.32		1.00	1.00
							1.00	
1202001-08	UNK	02/10/12 11:08:42 am	0.0146	386	0.87		1.00	1.00
							1.00	
1202001-09	UNK	02/10/12 11:10:39 am	0.0157	401	0.35		1.00	1.00
							1.00	

Dimock WO# 1202001

2/10/2012 11:48:14 AM

Superior 2/10/12 Dimock 6th.wsz

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Sample Name	Type	Date/Time	Conc (ppb)	µAbs	%RSD	Flags	Wt.	Vol. ODF
1202001-10	UNK	02/10/12 11:12:37 am	0.0147	388	1.03		1.00	1.0 1.00
1202001-11	UNK	02/10/12 11:14:34 am	0.0153	395	0.59		1.00	1.0 1.00
Method Blank 2	MB	02/10/12 11:16:32 am	0.0160	406	0.56	Z	1.00	1.0 1.00
1202001-12	UNK	02/10/12 11:18:30 am	0.0160	405	0.70		1.00	1.0 1.00
1202001-13	UNK	02/10/12 11:20:28 am	0.0156	399	0.32		1.00	1.0 1.00
1202001-14	UNK	02/10/12 11:22:27 am	0.0157	400	0.53		1.00	1.0 1.00
1202001-16	UNK	02/10/12 11:24:26 am	0.0160	406	0.51		1.00	1.0 1.00
CCV % Recovery 101.24	CCV	02/10/12 11:26:25 am	2.0250	28303	0.63		1.00	1.0 1.00
CCB	CCB	02/10/12 11:28:22 am	-0.0007	173	1.74		1.00	1.0 1.00
1202001-17	UNK	02/10/12 11:30:21 am	0.0161	406	0.38		1.00	1.0 1.00
1202001-17dup RPD 0.00	DUP	02/10/12 11:32:21 am	0.0157	402	0.94	D	1.00	1.0 1.00
1202001-18	UNK	02/10/12 11:34:21 am	0.0163	410	0.33		1.00	1.0 1.00
1202001-18spike % Recovery 85.44	MSK	02/10/12 11:36:17 am	1.7250	24143	0.44		1.00	1.0 1.00
1202001-20	UNK	02/10/12 11:38:14 am	0.0141	379	0.84		1.00	1.0 1.00
1202001-21	UNK	02/10/12 11:40:11 am	0.0138	374	0.36		1.00	1.0 1.00
1202001-22	UNK	02/10/12 11:42:09 am	0.0133	368	0.80		1.00	1.0 1.00
CCV % Recovery 101.44	CCV	02/10/12 11:44:08 am	2.0290	28358	0.54		1.00	1.0 1.00

2/10/2012 11:48:14 AM

Dimock 6th.wsz

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Sample Name	Type	Date/Time	Conc (ppb)	μAbs	%RSD	Flags	Wt. ODF	Vol.
CCB	CCB	02/10/12 11:46:05 am	-0.0006	175	2.42		1.00	1.0
							1.00	

Dimock WO# 1202001  
 Supers 2/10/12

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# Analysis Parameters

Instrument M-7500 Mercury Analyzer

## Conditions

Gas flow (mL/min)	Sample Uptake (s)	Rinse (s)	Read delay (s)	Replicates (#)	Replicate time (s)	Pump speed (%)	Wavelength (nm)
135	40.00	70.00	40.00	4	3.50	100	253.65

## Instrumental Zero

Zero before first sample: No

Zero periodically: Yes

Before each calibration.

## Baseline Correction

#1 Start time (s)	#1 End time (s)	#2 Start time (s)	#2 End time (s)
10.00	17.00	95.00	100.00

## Standby Mode

Enabled: Yes

Standby Options: pump off, lamp off

## Autodilution

Enabled: No

Condition:

Tube # range:

If no autodilution tubes remaining

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## Calibration

### Settings

Algorithm	Through blank	Weighted fit	Cal. Type	Racalibration rate	Reslope rate	Reslope standard
Linear	No	No	Normal	0	0	N/A

### Limits

Calibration slope		Reslope		Coeff. of Determination
Lower (%)	Upper (%)	Lower (%)	Upper (%)	
20	150	75	125	0.99500

Error action: Flag and continue

## QC

GLP Override: Yes

## QC Tests

Dimock 110<sup>th</sup> 1202001

2/10/2012 11:48:14 AM

Signature 2/10/12

Dimock 6th.wsz

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**CCB**

Concentration  
(ppb)  
0.2000

Failure flag: Q

Error action for manually inserted QC: Flag and continue

**ICB**

Concentration  
(ppb)  
0.2000

Failure flag: Z

Error action for manually inserted QC: Flag and continue

**CCV**

Concentration (ppb)	Low Limit %	High Limit %
2.0000	90.0000	110.0000

Failure flag: Q

Error action for manually inserted QC: Flag and continue

**ICV**

Concentration (ppb)	Low Limit %	High Limit %
2.0000	95.0000	105.0000

Failure flag: Q

Error action for manually inserted QC: Flag and continue

**LCS**

Concentration (ppb)	Low Limit %	High Limit %
2.0000	90.0000	110.0000

Failure flag: L

Error action for manually inserted QC: Flag and continue

**DUP**

Concentration (ppb)	Low Limit (ppb)	High Limit (ppb)	RPD
5.0000	0.0000	5.0000	20.0000

Failure flag: D

Error action for manually inserted QC: Flag and continue

**SPK**

Concentration (ppb)	Low Limit %	High Limit %	Min Rec	Sample $\mu$ Abs
2.0000	85.0000	115.0000	50.0000	0.0000

Failure flag: W

Error action for manually inserted QC: Flag and continue

*Dimock WD#1202001*  
*2/10/12*

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**MSK**

Concentration (ppb)	Low Limit %	High Limit %
2.0000	70.0000	130.0000

Failure flag: N

Error action for manually inserted QC: Stop analysis

**MB**

Concentration (ppb)
0.0005

Failure flag: Z

Error action for manually inserted QC: Flag and continue

*Dimock WO #120200/  
Signed 3/10/12*

*DRAFT*

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Tube	Sample Name	Sample Type	Weight	Volume	Dilution
S:1	Calibration Blank	Standard	1.00	1.00	1.00
S:2	Standard #1 (0.2)	Standard	1.00	1.00	1.00
S:3	Standard #2 (0.5)	Standard	1.00	1.00	1.00
S:4	Standard #3 (1.0)	Standard	1.00	1.00	1.00
S:5	Standard #4 (2.0)	Standard	1.00	1.00	1.00
S:6	Standard #5 (3.0)	Standard	1.00	1.00	1.00
S:7	Standard #6 (5.0)	Standard	1.00	1.00	1.00
S:5	ICV	ICV	1.00	1.00	1.00
S:1	ICB	ICB	1.00	1.00	1.00
1:1	LCS	LCS	1.00	1.00	1.00
S:5	CCV	CCV	1.00	1.00	1.00
S:1	CCB	CCB	1.00	1.00	1.00
1:2	Method Blank 1	Method Blank	1.00	1.00	1.00
1:3	QC Spike 1	QC Spike	1.00	1.00	1.00
1:4	0.2 std as sample	Unknown	1.00	1.00	1.00
1:5	1202001-23	Unknown	1.00	1.00	1.00
1:6	1202001-23dup	Duplicate	1.00	1.00	1.00
1:7	1202001-24	Unknown	1.00	1.00	1.00
1:8	1202001-24spike	Matrix Spike	1.00	1.00	1.00
1:9	1202001-25	Unknown	1.00	1.00	1.00
1:10	1202001-26	Unknown	1.00	1.00	1.00
1:11	1202001-27	Unknown	1.00	1.00	1.00
S:5	CCV	CCV	1.00	1.00	1.00
S:1	CCB	CCB	1.00	1.00	1.00
1:12	1202001-28	Unknown	1.00	1.00	1.00
1:13	1202001-29	Unknown	1.00	1.00	1.00
1:14	1202001-30	Unknown	1.00	1.00	1.00
1:15	1202001-31	Unknown	1.00	1.00	1.00
1:16	1202001-32	Unknown	1.00	1.00	1.00
1:17	Method Blank 2	Method Blank	1.00	1.00	1.00
1:18	1202001-33	Unknown	1.00	1.00	1.00
1:19	1202001-33dup	Duplicate	1.00	1.00	1.00
1:20	1202001-37	Unknown	1.00	1.00	1.00
1:21	1202001-37spike	Matrix Spike	1.00	1.00	1.00
S:5	CCV	CCV	1.00	1.00	1.00
S:1	CCB	CCB	1.00	1.00	1.00
1:22	1202001-38	Unknown	1.00	1.00	1.00
1:23	1202001-39	Unknown	1.00	1.00	1.00
1:24	1202001-40	Unknown	1.00	1.00	1.00
1:25	1202001-41	Unknown	1.00	1.00	1.00
1:26	1202001-42	Unknown	1.00	1.00	1.00
1:27	1202001-43	Unknown	1.00	1.00	1.00
1:28	1202001-44	Unknown	1.00	1.00	1.00
S:5	CCV - change to 3 ppb	CCV	1.00	1.00	1.00
S:1	CCB	CCB	1.00	1.00	1.00
1:29	1201001-44dup	Duplicate	1.00	1.00	1.00
1:30	1201001-45	Unknown	1.00	1.00	1.00
1:31	1201001-45spike	Matrix Spike	1.00	1.00	1.00
1:32	1201001-46	Unknown	1.00	1.00	1.00
1:33	1201001-51	Unknown	1.00	1.00	1.00
S:5	CCV	CCV	1.00	1.00	1.00
S:1	CCB	CCB	1.00	1.00	1.00

1:10 Test - same as above

Revised #7

WO# 1202001

Shuford 2/16/12

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# CETAC Hg Analysis Report

Analyst: Mercury Analyzer

Worksheet file: C:\Program Files\QuickTrace\Worksheets\Dimock #7.wsz

Date Started: 2/13/2012 10:24:12 AM

Comment:

## Results

Sample Name	Type	Date/Time	Conc (ppb)	µAbs	%RSD	Flags	Wt.	Vol. ODF
Calibration Blank	STD	02/14/12 10:56:55 am	0.0000	2927	1.36		1.00	1.0 1.00
Standard #1 (0.2)	STD	02/14/12 10:58:53 am	0.2000	5746	0.42		1.00	1.0 1.00
Standard #2 (0.5)	STD	02/14/12 11:00:51 am	0.5000	9946	0.38		1.00	1.0 1.00
Standard #3 (1.0)	STD	02/14/12 11:02:50 am	1.0000	16850	0.22		1.00	1.0 1.00
Standard #4 (2.0)	STD	02/14/12 11:04:49 am	2.0000	31092	0.47		1.00	1.0 1.00
Standard #5 (3.0)	STD	02/14/12 11:06:49 am	3.0000	44962	0.37		1.00	1.0 1.00
Standard #6 (5.0)	STD	02/14/12 11:08:50 am	5.0000	72698	0.36		1.00	1.0 1.00

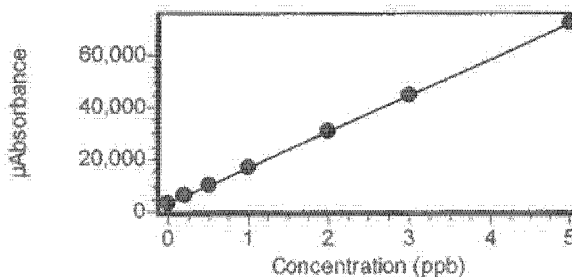
### Calibration

Equation:  $A = 2973.147 + 13966.650C$

R2: 0.99998

SEE: 113.8854

Flags:



ICV	ICV	02/14/12 11:10:49 am	1.9960	30850	0.34		1.00	1.0 1.00
% Recovery	99.80							
ICB	ICB	02/14/12 11:12:46 am	-0.0007	2963	0.26		1.00	1.0 1.00
LCS	LCS	02/14/12 11:14:43 am	1.9590	30329	0.44		1.00	1.0 1.00
% Recovery	97.93							

Dimock W0#1202001

Lufrico 2/16/12

2/14/2012 12:46:30 PM

Dimock #7.wsz

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Sample Name	Type	Date/Time	Conc (ppb)	µAbs	%RSD	Flags	WL	Vol. ODF
CCV	CCV	02/14/12 11:16:42 am	2.0200	31188	0.38		1.00	1.0
% Recovery 101.01							1.00	
CCB	CCB	02/14/12 11:18:39 am	0.0014	2992	0.23		1.00	1.0
							1.00	
Method Blank 1	MB	02/14/12 11:20:37 am	0.1878	5597	0.28	Z	1.00	1.0
							1.00	
QC Spike 1	SPK	02/14/12 11:22:34 am	2.0770	31982	0.34		1.00	1.0
% Recovery 94.46							1.00	
0.2 std as sample <i>TV = 2 ppb</i>	UNK	02/14/12 11:24:32 am	0.2037	5818	0.29		1.00	1.0
							1.00	
1202001-23	UNK	02/14/12 11:26:30 am	0.1747	5414	0.58		1.00	1.0
							1.00	
1202001-23dup	DUP	02/14/12 11:28:29 am	0.1760	5431	0.64		1.00	1.0
							1.00	
1202001-24	UNK	02/14/12 11:30:27 am	0.1271	4749	0.49		1.00	1.0
							1.00	
1202001-24spike	MSK	02/14/12 11:32:26 am	2.0210	31204	0.46		1.00	1.0
% Recovery 94.71							1.00	
1202001-25	UNK	02/14/12 11:34:26 am	0.1251	4721	0.54		1.00	1.0
							1.00	
1202001-26	UNK	02/14/12 11:36:25 am	0.1347	4855	0.14		1.00	1.0
							1.00	
1202001-27	UNK	02/14/12 11:38:25 am	0.1381	4901	0.23		1.00	1.0
							1.00	
CCV	CCV	02/14/12 11:40:25 am	2.0510	31619	0.54		1.00	1.0
% Recovery 102.55							1.00	
CCB	CCB	02/14/12 11:42:22 am	0.0038	3026	0.37		1.00	1.0
							1.00	
1202001-28	UNK	02/14/12 11:44:22 am	0.1408	4940	0.37		1.00	1.0
							1.00	
1202001-29	UNK	02/14/12 11:46:19 am	0.1431	4971	0.11		1.00	1.0
							1.00	
1202001-30	UNK	02/14/12 11:48:16 am	0.1382	4904	0.30		1.00	1.0
							1.00	

*Dimock WD#1202001*  
*2/16/12*  
 Dimock #7.wsz

2/14/2012 12:46:30 PM

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Sample Name	Type	Date/Time	Conc (ppb)	µAbs	%RSD	Flags	Wt.	Vol. ODF
1202001-31	UNK	02/14/12 11:50:13 am	0.1364	4879	0.31		1.00	1.00
1202001-32	UNK	02/14/12 11:52:10 am	0.1428	4967	0.41		1.00	1.00
Method Blank 2	MB	02/14/12 11:54:08 am	0.1410	4942	0.44	Z	1.00	1.00
1202001-33	UNK	02/14/12 11:56:06 am	0.0268	3347	0.47		1.00	1.00
1202001-33dup	DUP	02/14/12 11:58:04 am	0.0273	3355	0.54		1.00	1.00
RPD 0.00								
1202001-37	UNK	02/14/12 12:00:03 pm	0.0305	3400	0.23		1.00	1.00
1202001-37spike	MSK	02/14/12 12:02:02 pm	1.9590	30337	0.27		1.00	1.00
% Recovery		96.44						
CCV	CCV	02/14/12 12:04:01 pm	2.0530	31653	0.49		1.00	1.00
% Recovery		102.67						
CCB	CCB	02/14/12 12:05:58 pm	0.0042	3032	2.40		1.00	1.00
1202001-38	UNK	02/14/12 12:07:58 pm	0.0358	3473	0.18		1.00	1.00
1202001-39	UNK	02/14/12 12:09:57 pm	0.0223	3285	0.29		1.00	1.00
1202001-40	UNK	02/14/12 12:11:57 pm	0.0319	3418	0.17		1.00	1.00
1202001-41	UNK	02/14/12 12:13:54 pm	0.0311	3407	0.22		1.00	1.00
1202001-42	UNK	02/14/12 12:15:51 pm	0.0310	3406	0.42		1.00	1.00
1202001-43	UNK	02/14/12 12:17:48 pm	0.0310	3406	0.15		1.00	1.00
1202001-44	UNK	02/14/12 12:19:45 pm	-0.0019	2947	0.29		1.00	1.00
CCV	CCV	02/14/12 12:21:45 pm	3.0610	45730	0.48	Q	1.00	1.00
% Recovery		153.07						

Dimock WO 1202001

Shapiro 2/14/12

Dimock #7.wsz

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Sample Name	Type	Date/Time	Conc (ppb)	μAbs	%RSD	Flags	Wt.	Vol.
							ODF	
CCB	CCB	02/14/12 12:23:42 pm	0.0053	3047	0.46		1.00	1.0
							1.00	
1201001-44dup	DUP	02/14/12 12:25:39 pm	0.0005	2981	0.12	D	1.00	1.0
							1.00	
1201001-45	UNK	02/14/12 12:27:37 pm	-0.0012	2956	0.23		1.00	1.0
							1.00	
1201001-45spike	MSK	02/14/12 12:29:36 pm	2.0150	31114	0.40		1.00	1.0
% Recovery 100.81							1.00	
1201001-46	UNK	02/14/12 12:31:34 pm	-0.0016	2951	0.13		1.00	1.0
							1.00	
1201001-51	UNK	02/14/12 12:33:33 pm	-0.0049	2905	0.13		1.00	1.0
							1.00	
Single: Method Blank 3	MB	02/14/12 12:36:25 pm	0.0468	3627	0.34	Z	1.00	1.0
							1.00	
Single: Blank Spike 2	SPK	02/14/12 12:38:59 pm	1.9700	30489	0.29		1.00	1.0
% Recovery 0.00							1.00	
Single: CCV	CCV	02/14/12 12:41:24 pm	3.0730	45895	0.48	Q	1.00	1.0
% Recovery 153.86							1.00	
Single: CCB	CCB	02/14/12 12:43:54 pm	0.0035	3021	0.51		1.00	1.0
							1.00	
Single: test 1:10 - 1202001-26	UNK	02/14/12 12:46:13 pm	0.1355	4866	0.42		1.00	1.0
							1.00	

*Dimock WO# 1202001  
Analyzed 2/14/12*



# Analysis Parameters

Instrument M-7500 Mercury Analyzer

## Conditions

Gas flow (mL/min)	Sample Uptake (s)	Rinse (s)	Read delay (s)	Replicates (#)	Replicate time (s)	Pump speed (%)	Wavelength (nm)
135	40.00	70.00	40.00	4	3.50	100	253.65

## Instrumental Zero

Zero before first sample: No

Zero periodically: Yes

Before each calibration.

## Baseline Correction

#1 Start time (s)	#1 End time (s)	#2 Start time (s)	#2 End time (s)
10.00	17.00	95.00	100.00

## Standby Mode

Enabled: Yes

Standby Options: pump off, lamp off

## Autodilution

Enabled: No

Condition:

Tube # range:

If no autodilution tubes remaining

DRAFT

## Calibration

### Settings

Algorithm	Through blank	Weighted fit	Cal. Type	Racalibration rate	Reslope rate	Reslope standard
Linear	No	No	Normal	0	0	N/A

### Limits

Calibration slope		Reslope		Coeff. of Determination
Lower (%)	Upper (%)	Lower (%)	Upper (%)	
20	150	75	125	0.99500

Error action: Flag and continue

## QC

GLP Override: Yes

## QC Tests

Dimock WO# 1202001

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**CCB**

Concentration  
(ppb)  
0.2000

Failure flag: Q

Error action for manually inserted QC: Flag and continue

**ICB**

Concentration  
(ppb)  
0.2000

Failure flag: Z

Error action for manually inserted QC: Flag and continue

**CCV**

Concentration (ppb)	Low Limit %	High Limit %
2.0000	90.0000	110.0000

Failure flag: Q

Error action for manually inserted QC: Flag and continue

**ICV**

Concentration (ppb)	Low Limit %	High Limit %
2.0000	95.0000	105.0000

Failure flag: Q

Error action for manually inserted QC: Flag and continue

**LCS**

Concentration (ppb)	Low Limit %	High Limit %
2.0000	90.0000	110.0000

Failure flag: L

Error action for manually inserted QC: Flag and continue

**DUP**

Concentration (ppb)	Low Limit (ppb)	High Limit (ppb)	RPD
5.0000	0.0000	5.0000	20.0000

Failure flag: D

Error action for manually inserted QC: Flag and continue

**SPK**

Concentration (ppb)	Low Limit %	High Limit %	Min Rec	Sample $\mu$ Abs
2.0000	85.0000	115.0000	50.0000	0.0000

Failure flag: W

Error action for manually inserted QC: Flag and continue

*Dimock WO 1202001*

*DRAFT*



**MSK**

Concentration (ppb)	Low Limit %	High Limit %
2.0000	70.0000	130.0000

Failure flag: N

Error action for manually inserted QC: Stop analysis

**MB**

Concentration (ppb)
0.0005

Failure flag: Z

Error action for manually inserted QC: Flag and continue

*Dimock W01202001**DRAFT*





Tube	Sample Name	Sample Type	Weight	Volume	Dilution
S:1	Calibration Blank	Standard	1.00	1.00	1.00
S:2	Standard #1 (.0.2)	Standard	1.00	1.00	1.00
S:3	Standard #2 (0.5)	Standard	1.00	1.00	1.00
S:4	Standard #3 (1.0)	Standard	1.00	1.00	1.00
S:5	Standard #4 (2.0)	Standard	1.00	1.00	1.00
S:6	Standard #5 (3.0)	Standard	1.00	1.00	1.00
S:7	Standard #6 (5.0)	Standard	1.00	1.00	1.00
S:5	ICV	ICV	1.00	1.00	1.00
S:1	ICB	ICB	1.00	1.00	1.00
1:1	LCS	LCS	1.00	1.00	1.00
S:5	CCV	CCV	1.00	1.00	1.00
S:1	CCB	CCB	1.00	1.00	1.00
1:2	Method Blank 1	Method Blank	1.00	1.00	1.00
1:3	QC Spike 1	QC Spike	1.00	1.00	1.00
1:4	0.2 std as sample	Unknown	1.00	1.00	1.00
1:5	1202001-23	Unknown	1.00	1.00	1.00
1:6	1202001-23dup	Duplicate	1.00	1.00	1.00
1:7	1202001-24	Unknown	1.00	1.00	1.00
1:8	1202001-24spike	Matrix Spike	1.00	1.00	1.00
1:9	1202001-25	Unknown	1.00	1.00	1.00
1:10	1202001-26	Unknown	1.00	1.00	1.00
1:11	1202001-27	Unknown	1.00	1.00	1.00
S:5	CCV	CCV	1.00	1.00	1.00
S:1	CCB	CCB	1.00	1.00	1.00
1:12	1202001-28	Unknown	1.00	1.00	1.00
1:13	1202001-29	Unknown	1.00	1.00	1.00
1:14	1202001-30	Unknown	1.00	1.00	1.00
1:15	1202001-31	Unknown	1.00	1.00	1.00
1:16	1202001-32	Unknown	1.00	1.00	1.00
1:17	Method Blank 1	Method Blank	1.00	1.00	1.00
1:18	QC Spike 1	QC Spike	1.00	1.00	1.00
1:19	1202003-01	Unknown	1.00	1.00	1.00
1:20	1202003-01dup	Duplicate	1.00	1.00	1.00
1:21	1202003-02	Unknown	1.00	1.00	1.00
S:5	CCV	CCV	1.00	1.00	1.00
S:1	CCB	CCB	1.00	1.00	1.00
1:22	1202003-02spike	Matrix Spike	1.00	1.00	1.00
1:23	1202003-03	Unknown	1.00	1.00	1.00
1:24	1202003-04	Unknown	1.00	1.00	1.00
1:25	1202003-05	Unknown	1.00	1.00	1.00
1:26	1202003-06	Unknown	1.00	1.00	1.00
1:27	1202003-07	Unknown	1.00	1.00	1.00
1:28	1202003-08	Unknown	1.00	1.00	1.00
1:29	1202003-09	Unknown	1.00	1.00	1.00
1:30	1202003-10	Unknown	1.00	1.00	1.00
1:31	Method Blank 2	Method Blank	1.00	1.00	1.00
S:5	CCV	CCV	1.00	1.00	1.00
S:1	CCB	CCB	1.00	1.00	1.00
1:32	1202003-13	Unknown	1.00	1.00	1.00
1:33	1202003-13dup	Duplicate	1.00	1.00	1.00
1:34	1202003-14	Unknown	1.00	1.00	1.00
1:35	1202003-14spike	Matrix Spike	1.00	1.00	1.00
1:36	1202003-15	Unknown	1.00	1.00	1.00
1:37	1202003-16	Unknown	1.00	1.00	1.00
1:38	1202003-17	Unknown	1.00	1.00	1.00

DRAFT

Desai S.H. W/O# 1202001  
Ameyco 2/16/12



# CETAC Hg Analysis Report

Analyst: Mercury Analyzer

Worksheet file: C:\Program Files\QuickTrace\Worksheets\Dimock 8th.wsz

Date Started: 2/15/2012 1:19:52 PM

Comment:

## Results

Sample Name	Type	Date/Time	Conc (ppb)	µAbs	%RSD	Flags	Wt.	V.
Calibration Blank	STD	02/16/12 10:14:18 am	0.0000	3199	1.03		1.00	1.00
Standard #1 (0.2)	STD	02/16/12 10:16:16 am	0.2000	6037	0.25		1.00	1.00
Standard #2 (0.5)	STD	02/16/12 10:18:14 am	0.5000	10213	0.48		1.00	1.00
Standard #3 (1.0)	STD	02/16/12 10:20:13 am	1.0000	17311	0.43		1.00	1.00
Standard #4 (2.0)	STD	02/16/12 10:22:12 am	2.0000	31288	0.47		1.00	1.00
Standard #5 (3.0)	STD	02/16/12 10:24:12 am	3.0000	45331	0.44		1.00	1.00
Standard #6 (5.0)	STD	02/16/12 10:26:12 am	5.0000	72589	0.22		1.00	1.00

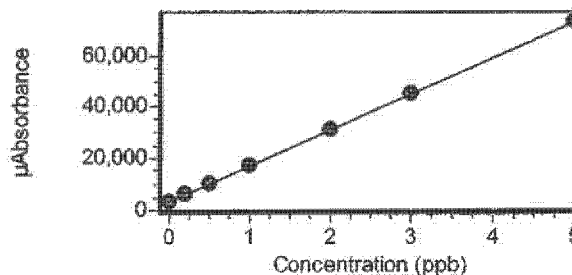
### Calibration:

Equation:  $A = 3333.875 + 13900.120C$

R2: 0.99995

SEE: 203.5534

Flags:



ICV	ICV	02/16/12 10:28:12 am	2.0100	31275	0.29		1.00	1.00
% Recovery							100.51	
ICB	ICB	02/16/12 10:30:09 am	-0.0060	3251	0.24		1.00	1.00
LCS	LCS	02/16/12 10:32:06 am	1.9430	30348	0.91		1.00	1.00
% Recovery							97.17	



Sample Name	Type	Date/Time	Conc (ppb)	µAbs	%RSD	Flags	Wt. ODF
1202001-31	UNK	02/16/12 11:07:35 am	-0.0118	3169	0.19		1.00 1.00
1202001-32	UNK	02/16/12 11:09:32 am	-0.0027	3297	0.30		1.00 1.00
Method Blank 1	MB	02/16/12 11:11:30 am	-0.0376	2812	0.32		1.00 1.00
QC Spike 1 % Recovery 95.94	SPK	02/16/12 11:13:28 am	1.8810	29482	0.22		1.00 1.00
1202003-01	UNK	02/16/12 11:15:26 am	-0.0211	3041	0.25		1.00 1.00
1202003-01dup RPD 0.00	DUP	02/16/12 11:17:25 am	-0.0250	2986	0.25 D		1.00 1.00
1202003-02	UNK	02/16/12 11:19:24 am	-0.0225	3022	0.29		1.00 1.00
CCV % Recovery 100.36	CCV	02/16/12 11:21:24 am	2.0070	31234	0.51		1.00 1.00
CCB	CCB	02/16/12 11:23:21 am	-0.0025	3300	0.42		1.00 1.00
1202003-02spike % Recovery 97.33	MSK	02/16/12 11:25:20 am	1.9440	30357	0.34		1.00 1.00
1202003-03	UNK	02/16/12 11:27:19 am	-0.0205	3049	0.45		1.00 1.00
1202003-04	UNK	02/16/12 11:29:19 am	-0.0269	2960	0.16		1.00 1.00
1202003-05	UNK	02/16/12 11:31:16 am	-0.0279	2946	0.40		1.00 1.00
1202003-06	UNK	02/16/12 11:33:13 am	-0.0245	2993	0.24		1.00 1.00
1202003-07	UNK	02/16/12 11:35:10 am	-0.0262	2970	0.39		1.00 1.00
1202003-08	UNK	02/16/12 11:37:08 am	-0.0158	3114	0.30		1.00 1.00
1202003-09	UNK	02/16/12 11:39:05 am	-0.0282	2941	0.21		1.00 1.00

2/16/2012 12:19:26 PM

Dimock 8th.wsz

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Sample Name	Type	Date/Time	Conc (ppb)	µAbs	%RSD	Flags	Wt. ODF	V
CCV	CCV	02/16/12 10:34:05 am	2.0160	31350	0.47		1.00	
% Recovery 100.78							1.00	
CCB	CCB	02/16/12 10:36:02 am	-0.0051	3263	0.15		1.00	
							1.00	
Method Blank 1	MB	02/16/12 10:37:59 am	-0.0155	3118	0.33		1.00	
							1.00	
QC Spike 1	SPK	02/16/12 10:39:57 am	1.8630	29227	0.31		1.00	
% Recovery 93.92							1.00	
0.2 std as sample	UNK	02/16/12 10:41:55 am	0.1931	6018	0.30		1.00	
							1.00	
1202001-23	UNK	02/16/12 10:43:53 am	-0.0266	2965	0.50		1.00	
							1.00	
1202001-23dup	DUP	02/16/12 10:45:51 am	-0.0225	3022	0.58		1.00	
RPD 0.00							1.00	
1202001-24	UNK	02/16/12 10:47:50 am	-0.0436	2728	0.54		1.00	
							1.00	
1202001-24spike	MSK	02/16/12 10:49:49 am	1.8210	28644	0.55		1.00	
% Recovery 93.22							1.00	
1202001-25	UNK	02/16/12 10:51:48 am	-0.0151	3124	0.32		1.00	
							1.00	
1202001-26	UNK	02/16/12 10:53:48 am	-0.0073	3233	0.15		1.00	1
							1.00	
1202001-27	UNK	02/16/12 10:55:48 am	-0.0136	3145	0.20		1.00	1
							1.00	
CCV	CCV	02/16/12 10:57:47 am	2.0300	31547	0.53		1.00	1
% Recovery 101.48							1.00	
CCB	CCB	02/16/12 10:59:44 am	-0.0034	3287	0.20		1.00	1
							1.00	
1202001-28	UNK	02/16/12 11:01:44 am	-0.0308	2905	0.33		1.00	1
							1.00	
1202001-29	UNK	02/16/12 11:03:41 am	-0.0258	2975	0.46		1.00	1
							1.00	
1202001-30	UNK	02/16/12 11:05:38 am	-0.0151	3124	0.23		1.00	1
							1.00	

2/16/2012 12:19:26 PM

*Dimock W# 1202001*  
*Surfaced 2/16/12*

Dimock 8th.wsz

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Sample Name	Type	Date/Time	Conc (ppb)	µAbs	%RSD	Flags	Wt.	V ODF
1202003-10	UNK	02/16/12 11:41:03 am	-0.0315	2896	0.20		1.00	1.00
Method Blank 2	MB	02/16/12 11:43:02 am	-0.0153	3120	0.28		1.00	1.00
CCV % Recovery 100.64	CCV	02/16/12 11:45:01 am	2.0130	31312	0.39		1.00	1.00
CCB	CCB	02/16/12 11:46:58 am	-0.0034	3287	0.28		1.00	1.00
1202003-13	UNK	02/16/12 11:48:57 am	-0.0250	2986	0.36		1.00	1.00
1202003-13dup RPD 0.00	DUP	02/16/12 11:50:56 am	-0.0075	3230	0.36		1.00	1.00
1202003-14	UNK	02/16/12 11:52:55 am	-0.0103	3191	0.38		1.00	1.00
1202003-14spike % Recovery 97.77	MSK	02/16/12 11:54:54 am	1.9450	30370	0.40		1.00	1.00
1202003-15	UNK	02/16/12 11:56:54 am	-0.0132	3151	0.16		1.00	1.00
1202003-16	UNK	02/16/12 11:58:51 am	-0.0149	3127	0.43		1.00	1.00
1202003-17	UNK	02/16/12 12:00:49 pm	-0.0138	3141	0.31		1.00	1.00
1202003-18	UNK	02/16/12 12:02:46 pm	-0.0029	3293	0.37		1.00	1.00
1202003-19	UNK	02/16/12 12:04:43 pm	-0.0125	3160	0.37		1.00	1.00
1202003-20	UNK	02/16/12 12:06:41 pm	-0.0121	3166	0.44		1.00	1.00
CCV % Recovery 155.21	CCV	02/16/12 12:08:41 pm	3.1040	46482	0.54 Q		1.00	1
CCB	CCB	02/16/12 12:10:38 pm	0.0005	3340	0.56		1.00	1
1202003-24	UNK	02/16/12 12:12:36 pm	-0.0101	3193	0.43		1.00	1



Sample Name	Type	Date/Time	Conc (ppb)	μAbs	%RSD	Flags	Wt.	V. ODF
1202003-25	UNK	02/16/12 12:14:34 pm	-0.0084	3217	0.56		1.00	1.00
CCV	CCV	02/16/12 12:16:33 pm	3.0990	46417	0.67	Q	1.00	1.00
% Recovery 154.97								
CCB	CCB	02/16/12 12:18:30 pm	-0.0001	3333	0.52		1.00	1.00

*not this work order*

*DRAFT*



# Analysis Parameters

**Instrument** M-7500 Mercury Analyzer

## Conditions

Gas flow (mL/min)	Sample Uptake (s)	Rinse (s)	Read delay (s)	Replicates (#)	Replicate time (s)	Pump speed (%)	Wavelength (nm)
135	40.00	70.00	40.00	4	3.50	100	253.65

## Instrumental Zero

Zero before first sample: No

Zero periodically: Yes  
Before each calibration.

## Baseline Correction

#1 Start time (s)	#1 End time (s)	#2 Start time (s)	#2 End time (s)
10.00	17.00	95.00	100.00

## Standby Mode

Enabled: Yes

Standby Options: pump off, lamp off

## Autodilution

Enabled: No

Condition:

Tube # range:

If no autodilution tubes remaining

DRAFT

## Calibration

### Settings

Algorithm	Through blank	Weighted fit	Cal. Type	Racalibration rate	Reslope rate	Reslope standard
Linear	No	No	Normal	0	0	N/A

### Limits

Calibration slope		Reslope		Coeff. of Determination
Lower (%)	Upper (%)	Lower (%)	Upper (%)	
20	150	75	125	0.99500

Error action: Flag and continue

## QC

GLP Override: Yes

## QC Tests

Dimock WD 1202001



**CCB**

Concentration  
(ppb)  
0.2000

Failure flag: Q

Error action for manually inserted QC: Flag and continue

**ICB**

Concentration  
(ppb)  
0.2000

Failure flag: Z

Error action for manually inserted QC: Flag and continue

**CCV**

Concentration (ppb)	Low Limit %	High Limit %
2.0000	90.0000	110.0000

Failure flag: Q

Error action for manually inserted QC: Flag and continue

**ICV**

Concentration (ppb)	Low Limit %	High Limit %
2.0000	95.0000	105.0000

DRAFT

Failure flag: Q

Error action for manually inserted QC: Flag and continue

**LCS**

Concentration (ppb)	Low Limit %	High Limit %
2.0000	90.0000	110.0000

Failure flag: L

Error action for manually inserted QC: Flag and continue

**DUP**

Concentration (ppb)	Low Limit (ppb)	High Limit (ppb)	RPD
5.0000	0.0000	5.0000	20.0000

Failure flag: D

Error action for manually inserted QC: Flag and continue

**SPK**

Concentration (ppb)	Low Limit %	High Limit %	Min Rec	Sample $\mu$ As
2.0000	85.0000	115.0000	50.0000	0.0000

Failure flag: W

Error action for manually inserted QC: Flag and continue

Dimock WO 1202001

11

12

13

14

15



**MSK**

Concentration (ppb)	Low Limit %	High Limit %
2.0000	70.0000	130.0000

Failure flag: N

Error action for manually inserted QC: Stop analysis

**MB**

Concentration  
(ppb)  
0.0005

Failure flag: Z

Error action for manually inserted QC: Flag and continue

*Dimock WO 120209**DRAFT*



## EPA OASQA MERCURY SAMPLE, REAGENT/STANDARD PREPARATION LOG PNB186

BB20704

bch\_mercury.rpt

Project: DAS R33907

Work Order No: 1202001

Site Name: Dimock Residential Groundwater

Analysis: Total Mercury by 245.1

Matrix: Water

Location: EPA #3 Shelf 2C

Client: OSWER - Emergency Response

Account#: 2012T03N303DC6A3TARS01

Method/SOP: EPA 245.1/R3QA131

Comments from WO:

*Dimock #6*

*DNH*

## EPA OASQA MERCURY SAMPLE, REAGENT/STANDARD, PREPARATION LOG PNB186

Analyst: <i>Amfeco</i>	NOTE: Solid samples are dried and prepared according to SOP 155 unless otherwise noted.				Certificate of Analysis Log # SNB14	
Sample Prep Date(s): <i>2/9/12</i>	5 ppb Standard and BS/MS spike wkg stock: 1ppm, date made: <i>2/4/12</i>		Pipets Log# SNB16		Balance Log# SNB14	
	Mfr: <i>Envirosep 1001119</i> Barcode: <i>12612</i> Exp. date: <i>2/11</i>					
	(1 µl of 1000ppm added to 100 ml DI water)					
SOP R3-QA131	Second Source wkg stock (SCV): 1ppm date made: <i>1/16/12</i>		DI Water Resistivity >18 (MΩcm) <i>(Y) N</i>			
	Mfr: <i>Apex 16-87</i> Barcode: <i>12738</i> Exp. date: <i>4/15/12</i>		Pipets Calibrated? <i>(Y) N</i>			
	(1 µl of 1000ppm added to 100 ml DI water)					
Hotblock: <i>Waterbath</i>	SRM ID: <i>NP</i> Barcode:		Reagent purity correct <i>(Y) N</i>			
Time/Temp start: <i>9:30 am 24.6°C</i>			BS and MS spike units =		µl	
Time/Temp stop: <i>11:30 am 24.3°C</i>						
Dilution Water: volume <i>200</i> mls	5ppb Standard: volume <i>100</i> mls (not digested)		Second Source (SCV): volume <i>100</i> mls			
(not digested) blank standard	Vol. of 1ppm soln added <i>500</i> µl		Vol of 1ppm soln added <i>100</i> µl (not digested)			
Date: <i>2/10/12</i>	0.2, 0.5, 1.0, 2.0, 3.0, 5.0 working standards - (not digested)		<i>(Weight)</i> Volume			
HNO <sub>3</sub> Vendor: <i>Fisher</i>	H <sub>2</sub> SO <sub>4</sub> Vendor: <i>Fisher</i>	HCl Vendor: <i>Fisher</i>	Barcode: <i>12729</i>	KMnO <sub>4</sub> Vendor: <i>VWR/BDH</i>		
Barcode: <i>11156</i>	Barcode: <i>11805</i>	10% rinse <i>2/2/12 SJD</i>	Date/Init:	Barcode: <i>12681</i>		
K <sub>2</sub> S <sub>2</sub> O Vendor: <i>Wallbrock</i>	SnCl <sub>2</sub> Vendor: <i>Aqua Solutions</i>	NaCl Vendor: <i>Apex</i>		NH <sub>2</sub> OH·HCl Vendor: <i>Fisher</i>		
Barcode: <i>5866</i>	Date/Init: <i>2/6/12 SS</i>	Barcode: <i>11025</i>	Date/Init: <i>2/8/12 SS</i>	Barcode: <i>11017</i>	Date/Init: <i>1/4/12 SS</i>	Barcode: <i>6438</i>

## EPA OASQA MERCURY SAMPLE, REAGENT/STANDARD PREPARATION LOG PNB186

BB20704

bch\_mercury.rpt

LabNumber	Cont ID	Sample Type	pH	Initial (mL)	Final (mL)	Spike1	Spike1 Amount $\mu$ l	Spike2	Spike2 Amount $\mu$ l	SourceID	ExtractionComments	Observations
1202001-01	<del>A</del> D	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-02	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-03	<del>A</del> D	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-04	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-05	<del>A</del> D	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-07	<del>A</del> D	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-08	<del>A</del> D	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-09	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-10	<del>A</del> D	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-11	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-12	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-13	<del>A</del> D	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-14	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-16	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-17	<del>A</del> D	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-18	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-20	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-21	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-22	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
BB20704-BLK1				25	25					-		
BB20704-BLK2				25	25					-		

EPA OASQA MERCURY SAMPLE, REAGENT/STANDARD PREPARATION LOG PNB186

BB20704

bch\_mercury.rpt

BB20704-BS1				25	25	0700077	50			-		
BB20704-DUP1				25	25					1202001-01		
BB20704-DUP2				25	25					1202001-17		
BB20704-MS1				25	25	0700077	50			1202001-02		
BB20704-MS2				25	25	0700077	50			1202001-18		

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## EPA OASQA MERCURY SAMPLE, REAGENT/STANDARD PREPARATION LOG PNB186

BB20904

bch\_mercury.rpt

Project: DAS R33907

Location: EPA #3 Shelf 2B

Work Order No: 1202001

EPA #3 Shelf 2C

Site Name: Dimock Residential Groundwater

Client: OSWER - Emergency Response

Analysis: Total Mercury by 245.1

Account#: 2012T03N303DC6A3TARS00

Matrix: Water

Method/SOP: EPA 245.1/R3QA131

Comments from WO:

*Dimock #7*  
*Data for WO# 1202001 Samples 33-51*

## EPA OASQA MERCURY SAMPLE, REAGENT/STANDARD, PREPARATION LOG PNB186

Analyst: <i>Lucy Guco</i>	NOTE: Solid samples are dried and prepared according to SOP 155 unless otherwise noted.		Certificate of Analysis Log#	SNB14
Sample Prep Date(s): <i>2/13/12</i>	5 ppb Standard and BS/MS spike wkg stock: 1ppm, date made: <i>4/4/12</i>		Pipets Log#	SNB16
	Mfr: <i>Eurochem 1001119</i>	Barcode: <i>12612</i>	Exp. date: <i>12/11</i>	Balance Log#
	(1 µl of 1000ppm added to 100 ml DI water)			SNB14
SOP R3-QA131	Second Source wkg stock (SCV): 1ppm, date made: <i>4/6/12</i>		DI Water Resistivity >18 (MΩcm)	<i>(Y)</i> N
	Mfr: <i>Spex 16-81</i>	Barcode: <i>12738</i>	Exp. date: <i>4/15/12</i>	Pipets Calibrated? <i>(Y)</i> N
	(1 µl of 1000ppm added to 100 ml DI water)			
Hotblock <i>(Waterbath)</i>	SRM ID: <i>NA</i>		Reagent purity correct	<i>(Y)</i> N
Time/Temp start: <i>10:10 AM 93.5 °C</i>	Barcode:		BS and MS spike units =	µl
Time/Temp stop: <i>12:10 PM 94.9 °C</i>				
Dilution Water: volume <i>200</i> mls	5ppb Standard: volume <i>100</i> mls (not digested)	Second Source (SCV): volume <i>100</i> mls		
(not digested) blank standard	Vol. of 1ppm soln added <i>500</i> µl	Vol of 1ppm soln added <i>200</i> µl (not digested)		
Date: <i>2/14/12</i>	0.2, 0.5, 1.0, 2.0, 3.0, 5.0 working standards - (not digested)		Weight / Volume	
HNO <sub>3</sub> Vendor: <i>Fisher</i>	H <sub>2</sub> SO <sub>4</sub> Vendor: <i>Fisher</i>	HCl Vendor: <i>Fisher</i>	Barcode: <i>12729</i>	KMnO <sub>4</sub> Vendor: <i>WR/BDH</i>
Barcode: <i>11156</i>	Barcode: <i>11805</i>	10 % rinse	Date/Init: <i>2/2/12 SS</i>	Barcode: <i>12681</i>
K <sub>2</sub> S <sub>2</sub> O Vendor: <i>Mallinckrodt</i>	SnCl <sub>2</sub> Vendor: <i>Aqua Solutions</i>	NaCl Vendor: <i>Fisher</i>		NH <sub>2</sub> OH·HCl Vendor: <i>Fisher</i>
Barcode: <i>5866</i>	Date/Init: <i>2/4/12 SS</i>	Barcode: <i>11025</i>	Date/Init: <i>2/8/12 SS</i>	Barcode: <i>11017</i>
		Date/Init: <i>2/10/12 SS</i>		Date/Init: <i>2/10/12 SS</i>

## EPA OASQA MERCURY SAMPLE, REAGENT/STANDARD PREPARATION LOG PNB186

BB20904

bch\_mercury.rpt

LabNumber	Cont ID	Sample Type	pH	Initial (mL)	Final (mL)	Spike1	Spike1 Amount $\mu$ l	Spike2	Spike2 Amount $\mu$ l	SourceID	ExtractionComments	Observations
1202001-23	<del>AE</del>	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-24	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-25	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-26	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-27	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-28	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-29	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-30	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-31	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-32	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-33	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-37	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-38	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-39	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-40	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-41	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-42	A	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-43	<del>AD</del>	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-44	<del>AD</del>	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-45	<del>AD</del>	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	
1202001-46	<del>AD</del>	SAM		25	25						71/71 Drinking Water (Total/Dissolved)	



## EPA OASQA MERCURY SAMPLE, REAGENT/STANDARD PREPARATION LOG PNB186

BB20904

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1202001-51	A	SAM	PH	25	25						71/71 Drinking Water (Total/Dissolved)	
BB20904-BLK1				25	25					-		
BB20904-BLK2				25	25					-		
BB20904-BLK3				25	25					-		
BB20904-BS1				25	25	0700077	50			-		
BB20904-BS2				25	25	0700077	50			-		
BB20904-DUP1				25	25					1202001-23		
BB20904-DUP2				25	25					1202001-33		
BB20904-DUP3				25	25					1202001-44		
BB20904-MS1				25	25	0700077	50			1202001-24		
BB20904-MS2				25	25	0700077	50			1202001-37		
BB20904-MS3				25	25	0700077	50			1202001-45		

5124-7



## EPA OASQA MERCURY SAMPLE, REAGENT/STANDARD PREPARATION LOG PNB186

BB21305

bch\_mercury.rpt

Project: DAS R33907

Work Order No: 1202003

Site Name: Dimock Residential Groundwater

Analysis: Total Mercury by 245.1

Matrix: Water

Location: Analyst

EPA #3 Shelf 2B

Client: OSWER - Emergency Response

Account#: 2012T03N303DC6A3TARS06

Method/SOP: EPA 245.1/R3QA131

Comments from WO:

Data for WO# 1202001, Batch BB 20904 re-run samples 23-32  
WO# 1202003, Batch BB 21302

## EPA OASQA MERCURY SAMPLE, REAGENT/STANDARD, PREPARATION LOG PNB186

Analyst: <i>Surfano</i>		NOTE: Solid samples are dried and prepared according to SOP 155 unless otherwise noted.				Certificate of Analysis Log # SNB14	
Sample Prep Date(s): <i>2/15/12</i>		5 ppb Standard and BS/MS spike wkg stock: 1ppm, date made: <i>1/4/12</i>		Pipets Log# SNB16		Balance Log# SNB14	
		Mfr: <i>Enviro 1000119</i> Barcode: <i>12612</i> Exp. date: <i>12/11</i>					
		(1 ul of 1000ppm added to 100 ml DI water)					
SOP R3-QA131		Second Source wkg stock (SCV): 1ppm date made: <i>1/4/12</i>		DI Water Resistivity >18 (MΩcm) <input checked="" type="checkbox"/> Y <input type="checkbox"/> N			
		Mfr: <i>Env 10-81</i> Barcode: <i>12738</i> Exp. date: <i>4/15/12</i>		Pipets Calibrated? <input checked="" type="checkbox"/> Y <input type="checkbox"/> N			
		(1 ul of 1000ppm added to 100 ml DI water)					
Hotblock / <u>Waterbath</u>				Reagent purity correct <input checked="" type="checkbox"/> Y <input type="checkbox"/> N			
Time/Temp start: <i>1/10/12</i> <i>94°C</i>		SRM ID: <i>NA</i> Barcode:		BS and MS spike units =		ul	
Time/Temp stop: <i>1/10/12</i> <i>95°C</i>							
Dilution Water: volume <i>200</i> mls		5ppb Standard: volume <i>100</i> mls (not digested)		Second Source (SCV): volume <i>100</i> mls			
(not digested) blank standard		Vol. of 1ppm soln added <i>500</i> ul		Vol of 1ppm soln added <i>200</i> ul (not digested)			
Date: <i>2/14/12</i>		0.2, 0.5, 1.0, 2.0, 3.0, 5.0 working standards - (not digested)		<input checked="" type="checkbox"/> Weight / Volume			
HNO <sub>3</sub> Vendor: <i>Fisher</i>		H <sub>2</sub> SO <sub>4</sub> Vendor: <i>Fisher</i>		HCl Vendor: <i>Fisher</i> Barcode: <i>12729</i>		KMnO <sub>4</sub> Vendor: <i>W.R./BDH</i>	
Barcode: <i>11156</i>		Barcode: <i>11805</i>		10 % rinse <i>2/14/12</i> <i>ss</i> Date/Init:		Barcode: <i>12665</i>	
K <sub>2</sub> S <sub>2</sub> O Vendor: <i>Mallinckrodt</i>		SnCl <sub>2</sub> Vendor: <i>Aqua Solutions</i>		NaCl Vendor: <i>Ac Pure</i>		NH <sub>2</sub> OH·HCl Vendor: <i>Fisher</i>	
Barcode: <i>5866</i> Date/Init: <i>2/6/12</i> <i>ss</i>		Barcode: <i>11025</i> Date/Init: <i>2/14/12</i> <i>ss</i>		Barcode: <i>11017</i> Date/Init: <i>2/15/12</i> <i>ss</i>		Barcode: <i>12668</i> Date/Init: <i>2/15/12</i> <i>ss</i>	



1202001

## U.S. EPA Region 3 - FOR INTERNAL USE ONLY

Client: OSWER - Emergency Response  
 Project: DAS R33907  
 Final Report Due: 02/29/2012

Project Manager: Cindy Caporale  
 Site Name: Dimock Residential Groundwater  
 Acct#: 2012T03N303DC6A3TARS00

Report To:

Client Project Manager: Rich Fetzer  
 Email: fetzer.richard@epa.gov  
 Phone: (610) 861-2087  
 Fax:

Project/WO Comments

Unvalidated data = 7 days (refer to  
 Special Instructions)  
 Validated data = 21 days

Shelf

Analyst  
 EPA #3 Shelf 2B  
 EPA #3 Shelf 2C  
 EPA #3 Shelf 8C  
 EPA #5 VOA

Received By: **Ex. 4 - CBI**

Date Received: 02/03/12 11:00

Temperature Samples Received at: 2°C

Custody Seals Yes

Containers Intact Yes

COC/Labels Agree Yes

Preservation Confirmed Yes

Received On Ice Yes  
 Radiation Checked Yes

## ESAT INFO ONLY

Preliminary Report Due Date \_\_\_\_\_

ESAT Due Date \_\_\_\_\_

\_\_\_\_\_ Complete \_\_\_\_\_ Not Complete

\_\_\_\_\_ Need TDF \_\_\_\_\_ TDF #

Sample# 1202001-01 Lab\Report Matrix Water\Drinking Water Sample Logged In: 02/03/12 11:45  
 Sample Name: HW42 Date Sampled 02/02/12 10:28 Sample Received: 02/03/12 11:00  
 Sample Type: SAM  
 Total Mercury by 245.1 Expires: 03/01/12 10:28 Batched  
 Analysis Comments: 71/71 Drinking Water (Total/Dissolved)  
 Sample Comments

Sample# 1202001-02 Lab\Report Matrix Water\Drinking Water Sample Logged In: 02/03/12 11:45  
 Sample Name: HW42-F Date Sampled 02/02/12 10:28 Sample Received: 02/03/12 11:00  
 Sample Type: SAM  
 Total Mercury by 245.1 Expires: 03/01/12 10:28 Batched  
 Analysis Comments: 71/71 Drinking Water (Total/Dissolved)  
 Sample Comments

Sample# 1202001-03 Lab\Report Matrix Water\Drinking Water Sample Logged In: 02/03/12 11:45  
 Sample Name: HW46 Date Sampled 02/02/12 11:39 Sample Received: 02/03/12 11:00  
 Sample Type: SAM  
 Total Mercury by 245.1 Expires: 03/01/12 11:39 Batched  
 Analysis Comments: 71/71 Drinking Water (Total/Dissolved)  
 Sample Comments

Sample# 1202001-04 Lab\Report Matrix Water\Drinking Water Sample Logged In: 02/03/12 11:45  
 Sample Name: HW46-F Date Sampled 02/02/12 11:39 Sample Received: 02/03/12 11:00  
 Sample Type: SAM  
 Total Mercury by 245.1 Expires: 03/01/12 11:39 Batched  
 Analysis Comments: 71/71 Drinking Water (Total/Dissolved)  
 Sample Comments

Sample# 1202001-05	Lab\Report Matrix Water\Drinking Water	Sample Logged In: 02/03/12 11:45
Sample Name: HW46-P	Date Sampled 02/02/12 11:24	Sample Received: 02/03/12 11:00
Sample Type: SAM		
Total Mercury by 245.1	Expires: 03/01/12 11:24	Batched
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments:	
Sample# 1202001-07	Lab\Report Matrix Water\Water	Sample Logged In: 02/03/12 11:45
Sample Name: FB09	Date Sampled 02/02/12 10:15	Sample Received: 02/03/12 11:00
Sample Type: SAM		
Total Mercury by 245.1	Expires: 03/01/12 10:15	Batched
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments:	
Sample# 1202001-08	Lab\Report Matrix Water\Water	Sample Logged In: 02/03/12 11:45
Sample Name: FB08	Date Sampled 02/01/12 14:45	Sample Received: 02/03/12 11:00
Sample Type: SAM		
Total Mercury by 245.1	Expires: 02/29/12 14:45	Batched
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments:	
Sample# 1202001-09	Lab\Report Matrix Water\Water	Sample Logged In: 02/03/12 11:45
Sample Name: FB08-F	Date Sampled 02/01/12 14:45	Sample Received: 02/03/12 11:00
Sample Type: SAM		
Total Mercury by 245.1	Expires: 02/29/12 14:45	Batched
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments:	
Sample# 1202001-10	Lab\Report Matrix Water\Drinking Water	Sample Logged In: 02/03/12 11:45
Sample Name: HW34a	Date Sampled 02/01/12 15:47	Sample Received: 02/03/12 11:00
Sample Type: SAM		
Total Mercury by 245.1	Expires: 02/29/12 15:47	Batched
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments:	
Sample# 1202001-11	Lab\Report Matrix Water\Drinking Water	Sample Logged In: 02/03/12 11:45
Sample Name: HW34a-F	Date Sampled 02/01/12 10:45	Sample Received: 02/03/12 11:00
Sample Type: SAM		
Total Mercury by 245.1	Expires: 02/29/12 10:45	Batched
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments:	
Sample# 1202001-12	Lab\Report Matrix Water\Water	Sample Logged In: 02/03/12 11:45
Sample Name: FB09-F	Date Sampled 02/02/12 10:15	Sample Received: 02/03/12 11:00
Sample Type: SAM		
Total Mercury by 245.1	Expires: 03/01/12 10:15	Batched
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments:	
Sample# 1202001-13	Lab\Report Matrix Water\Drinking Water	Sample Logged In: 02/03/12 11:45
Sample Name: HW42z	Date Sampled 02/02/12 10:29	Sample Received: 02/03/12 11:00
Sample Type: SAM		
Total Mercury by 245.1	Expires: 03/01/12 10:29	Batched
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments:	

Sample# 1202001-14	Lab\Report Matrix Water\Drinking Water	Sample Logged In: 02/03/12 11:45
Sample Name: HW42z-F	Date Sampled 02/02/12 10:29	Sample Received: 02/03/12 11:00
Sample Type: SAM		
Total Mercury by 245.1	Expires: 03/01/12 10:29	Batched
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments	
Sample# 1202001-16	Lab\Report Matrix Water\Drinking Water	Sample Logged In: 02/03/12 11:45
Sample Name: HW46-PF	Date Sampled 02/02/12 11:24	Sample Received: 02/03/12 11:00
Sample Type: SAM		
Total Mercury by 245.1	Expires: 03/01/12 11:24	Batched
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments	
Sample# 1202001-17	Lab\Report Matrix Water\Drinking Water	Sample Logged In: 02/03/12 11:45
Sample Name: HW34a-P	Date Sampled 02/01/12 15:55	Sample Received: 02/03/12 11:00
Sample Type: SAM		
Total Mercury by 245.1	Expires: 02/29/12 15:55	Batched
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments: <u>Use for QC</u>	
Sample# 1202001-18	Lab\Report Matrix Water\Drinking Water	Sample Logged In: 02/03/12 11:45
Sample Name: HW34a-PF	Date Sampled 02/01/12 15:55	Sample Received: 02/03/12 11:00
Sample Type: SAM		
Total Mercury by 245.1	Expires: 02/29/12 15:55	Batched
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments: <u>Use for QC</u>	
Sample# 1202001-20	Lab\Report Matrix Water\Drinking Water	Sample Logged In: 02/04/12 12:47
Sample Name: HW28a	Date Sampled 02/03/12 11:49	Sample Received: 02/04/12 11:10
Sample Type: SAM		
Total Mercury by 245.1	Expires: 03/02/12 11:49	Batched
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments	
Sample# 1202001-21	Lab\Report Matrix Water\Drinking Water	Sample Logged In: 02/04/12 12:47
Sample Name: HW28a-F	Date Sampled 02/03/12 11:49	Sample Received: 02/04/12 11:10
Sample Type: SAM		
Total Mercury by 245.1	Expires: 03/02/12 11:49	Batched
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments	
Sample# 1202001-22	Lab\Report Matrix Water\Drinking Water	Sample Logged In: 02/04/12 12:47
Sample Name: HW28a-P	Date Sampled 02/03/12 11:52	Sample Received: 02/04/12 11:10
Sample Type: SAM		
Total Mercury by 245.1	Expires: 03/02/12 11:52	Batched
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments: <u>Some parameters arrived 2/6/12</u>	
Sample# 1202001-23	Lab\Report Matrix Water\Drinking Water	Sample Logged In: 02/04/12 12:47
Sample Name: HW39	Date Sampled 02/03/12 10:42	Sample Received: 02/04/12 11:10
Sample Type: SAM		
Total Mercury by 245.1	Expires: 03/02/12 10:42	Received
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments: <u>Some parameters arrived 2/6/12; QC for VOC, Anions</u>	

Sample# 1202001-24	Lab\Report Matrix Water\Drinking Water	Sample Logged In: 02/04/12 12:47
Sample Name: HW39-P	Date Sampled 02/03/12 11:13	Sample Received: 02/04/12 11:10
Sample Type: SAM		
Total Mercury by 245.1	Expires: 03/02/12 11:13	Received
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments	
Sample# 1202001-25	Lab\Report Matrix Water\Drinking Water	Sample Logged In: 02/04/12 12:47
Sample Name: HW39-PF	Date Sampled 02/03/12 11:13	Sample Received: 02/04/12 11:10
Sample Type: SAM		
Total Mercury by 245.1	Expires: 03/02/12 11:13	Received
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments	
Sample# 1202001-26	Lab\Report Matrix Water\Drinking Water	Sample Logged In: 02/04/12 12:47
Sample Name: HW40	Date Sampled 02/02/12 15:39	Sample Received: 02/04/12 11:10
Sample Type: SAM		
Total Mercury by 245.1	Expires: 03/01/12 15:39	Received
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments	
Sample# 1202001-27	Lab\Report Matrix Water\Drinking Water	Sample Logged In: 02/04/12 12:47
Sample Name: HW40-F	Date Sampled 02/02/12 15:39	Sample Received: 02/04/12 11:10
Sample Type: SAM		
Total Mercury by 245.1	Expires: 03/01/12 15:39	Received
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments	
Sample# 1202001-28	Lab\Report Matrix Water\Drinking Water	Sample Logged In: 02/04/12 12:47
Sample Name: HW40-P	Date Sampled 02/02/12 15:44	Sample Received: 02/04/12 11:10
Sample Type: SAM		
Total Mercury by 245.1	Expires: 03/01/12 15:44	Received
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments	
Sample# 1202001-29	Lab\Report Matrix Water\Drinking Water	Sample Logged In: 02/04/12 12:47
Sample Name: HW40-PF	Date Sampled 02/02/12 15:44	Sample Received: 02/04/12 11:10
Sample Type: SAM		
Total Mercury by 245.1	Expires: 03/01/12 15:44	Received
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments	
Sample# 1202001-30	Lab\Report Matrix Water\Drinking Water	Sample Logged In: 02/04/12 12:47
Sample Name: HW41	Date Sampled 02/02/12 16:12	Sample Received: 02/04/12 11:10
Sample Type: SAM		
Total Mercury by 245.1	Expires: 03/01/12 16:12	Received
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments	
Sample# 1202001-31	Lab\Report Matrix Water\Drinking Water	Sample Logged In: 02/04/12 12:47
Sample Name: HW41-F	Date Sampled 02/02/12 16:12	Sample Received: 02/04/12 11:10
Sample Type: SAM		
Total Mercury by 245.1	Expires: 03/01/12 16:12	Received
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments	



Sample# 1202001-32	Lab\Report Matrix Water\Drinking Water	Sample Logged In: 02/04/12 12:47
Sample Name: HW41-P	Date Sampled 02/02/12 15:54	Sample Received: 02/04/12 11:10
Sample Type: SAM		
Total Mercury by 245.1	Expires: 03/01/12 15:54	Received
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments	
Sample# 1202001-33	Lab\Report Matrix Water\Drinking Water	Sample Logged In: 02/04/12 12:47
Sample Name: HW41-PF	Date Sampled 02/02/12 15:54	Sample Received: 02/04/12 11:10
Sample Type: SAM		
Total Mercury by 245.1	Expires: 03/01/12 15:54	Received
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments	
Sample# 1202001-37	Lab\Report Matrix Water\Drinking Water	Sample Logged In: 02/07/12 07:45
Sample Name: HW28b-PF	Date Sampled 02/03/12 14:27	Sample Received: 02/06/12 16:40
Sample Type: SAM		
Total Mercury by 245.1	Expires: 03/02/12 14:27	Received
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments	
Sample# 1202001-38	Lab\Report Matrix Water\Drinking Water	Sample Logged In: 02/07/12 07:45
Sample Name: HW28a-PF	Date Sampled 02/03/12 11:52	Sample Received: 02/06/12 16:40
Sample Type: SAM		
Total Mercury by 245.1	Expires: 03/02/12 11:52	Received
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments	
Sample# 1202001-39	Lab\Report Matrix Water\Drinking Water	Sample Logged In: 02/07/12 07:45
Sample Name: HW39-F	Date Sampled 02/03/12 10:42	Sample Received: 02/06/12 16:40
Sample Type: SAM		
Total Mercury by 245.1	Expires: 03/02/12 10:42	Received
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments	
Sample# 1202001-40	Lab\Report Matrix Water\Drinking Water	Sample Logged In: 02/07/12 07:45
Sample Name: HW09-PF	Date Sampled 02/03/12 15:16	Sample Received: 02/06/12 16:40
Sample Type: SAM		
Total Mercury by 245.1	Expires: 03/02/12 15:16	Received
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments	
Sample# 1202001-41	Lab\Report Matrix Water\Water	Sample Logged In: 02/07/12 07:45
Sample Name: FB10-F	Date Sampled 02/03/12 14:09	Sample Received: 02/06/12 16:40
Sample Type: SAM		
Total Mercury by 245.1	Expires: 03/02/12 14:09	Received
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments	
Sample# 1202001-42	Lab\Report Matrix Water\Water	Sample Logged In: 02/07/12 07:45
Sample Name: HW09-F	Date Sampled 02/03/12 15:20	Sample Received: 02/06/12 16:40
Sample Type: SAM		
Total Mercury by 245.1	Expires: 03/02/12 15:20	Received
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments	

Sample# 1202001-43	Lab\Report Matrix Water\Drinking Water	Sample Logged In: 02/07/12 07:45
Sample Name: HW28b-P	Date Sampled 02/03/12 14:27	Sample Received: 02/06/12 16:40
Sample Type: SAM		
Total Mercury by 245.1	Expires: 03/02/12 14:27	Received
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments	
Sample# 1202001-44	Lab\Report Matrix Water\Drinking Water	Sample Logged In: 02/07/12 07:45
Sample Name: HW09	Date Sampled 02/03/12 15:20	Sample Received: 02/06/12 16:40
Sample Type: SAM		
Total Mercury by 245.1	Expires: 03/02/12 15:20	Received
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments	
Sample# 1202001-45	Lab\Report Matrix Water\Drinking Water	Sample Logged In: 02/07/12 07:45
Sample Name: HW09-P	Date Sampled 02/03/12 15:16	Sample Received: 02/06/12 16:40
Sample Type: SAM		
Total Mercury by 245.1	Expires: 03/02/12 15:16	Received
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments	
Sample# 1202001-46	Lab\Report Matrix Water\Water	Sample Logged In: 02/07/12 07:45
Sample Name: FB10	Date Sampled 02/03/12 14:09	Sample Received: 02/06/12 16:40
Sample Type: SAM		
Total Mercury by 245.1	Expires: 03/02/12 14:09	Received
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments	
Sample# 1202001-51	Lab\Report Matrix Water\Water	Sample Logged In: 02/07/12 07:45
Sample Name: HW39-RO	Date Sampled 02/03/12 11:01	Sample Received: 02/06/12 16:40
Sample Type: SAM		
Total Mercury by 245.1	Expires: 03/02/12 11:01	Received
	Analysis Comments: 71/71 Drinking Water (Total/Dissolved)	
	Sample Comments	

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# ENVIRONMENTAL EXPRESS

## Certificate of Analysis

### Product Description:

Name:	Mercury	Source Material:	Mercury Metal
Part Number:	HP100033-1	Material Purity:	99.9998%
Lot Number:	1001119	Matrix:	2% (v/v) HNO <sub>3</sub>

**Certified Value:** 1000 µg/mL ± 6 µg/mL

The Certified value is based on gravimetric and volumetric preparation, and confirmed against SRM 3133 (lot number 061204) by inductively coupled plasma optical emission spectrometry (ICP-OES) using an internal laboratory-developed method. The uncertainty in the certified value is calculated for a 95% confidence interval and coverage factor *k* is about 2.

### Uncertified Values:

**Density:** 1.0095 g/mL @ 21.8°C

#### Impurity values via ICP Analysis in µg/L:

The typical values detected in the standard solution at 1000 µg/mL are listed below. The values are based upon the analysis results for the starting source material.

Ag	<0.02	Cu	<0.25	La	<0.02	Pt	<0.02	Te	<0.02
Al	<0.1	Dy	<0.02	Li	<0.02	Rb	<0.02	Th	<0.02
As	<0.05	Er	<0.02	Lu	<0.02	Re	<0.02	Ti	<0.02
Au	<0.02	Eu	<0.02	Mg	<0.5	Rh	<0.02	Tl	<0.02
B	<1	Fe	<1	Mn	<0.1	Ru	<0.02	Tm	<0.02
Ba	<0.02	Ga	<0.02	Mo	<0.02	Sb	<0.02	U	<0.1
Be	<0.02	Gd	<0.02	Na	<1	Sc	<0.02	V	<0.05
Bi	<0.02	Ge	<0.02	Nb	<0.02	Se	<0.1	W	<0.02
Ca	<0.1	Hf	<0.02	Nd	<0.02	Si	<1	Y	<0.02
Cd	<0.02	Hg	M	Ni	<0.02	Sm	<0.02	Yb	<0.02
Ce	<0.02	Ho	<0.02	Os	<0.02	Sr	<1	Zn	<0.1
Co	<0.05	In	<0.02	Pb	<0.05	Ta	<0.02	Zr	<0.02
Cr	<0.1	Ir	<0.02	Pd	<0.02	Tb	<0.02		
Cs	<0.02	K	<1	Pr	<0.02				

### Preparation Information:

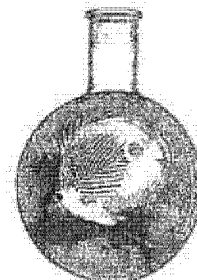
The standard solution is prepared using high purity materials and assayed by analytical methods for conformity prior to use. This standard was prepared using the methods developed at NIST for SRM Spectrometric Standard Solutions under appropriate laboratory conditions.

Sub-boiling distilled high-purity acid has been used to place the materials in solution and to stabilize the standard. The matrix is as noted above in 18 megaohm deionized water.

Stability of this product is based upon rigorous short term and long term testing of the solution for the certified value. This testing includes, but is not limited to, the effect of temperature and packaging on the product.

490 Wando Park Blvd.  
Mt. Pleasant, South Carolina 29464  
Phone: 1.843.881.6560  
Toll Free: 1.800.343.5319  
FAX: 1.843.881.3964  
www.environmentalexpress.com

Lot No.: 1001119  
Rev. No.: 2.0.1  
Page 1 of 2



### Intended Use

This Certified Reference Material (CRM) is intended for use as a calibration standard for the quantitative determination of mercury, calibration of instruments such as ICPOES, ICPMS, AAS and XRF, and validation of analytical methods. It also can be used in EPA, ASTM and other methods.

### Traceability Information:

The traceability of this standard is maintained through an unbroken chain of comparisons to appropriate standards with suitable procedure and measurement uncertainties.

a. **Standard Weight and Analytical Balance Calibration:**

The standard weights (NBS weights Inventory No 20231A) are calibrated every two years by South Carolina Metrology Laboratory that is a participant in "NIST Weights and Measures Measurement Assurance Program" with a certificate of measurement traceability to NIST primary standards.

The balances are calibrated yearly by the ISO 17025 accredited metrology service, and are calibrated weekly by an in-house method using standard weights.

b. **Volumetric Device Calibration:**

The calibration of volumetric vessels is checked annually using the NBS 602 method.

c. **Thermometer Calibration:**

The standard thermometers are calibrated every year by the ISO 17025 accredited metrology service. The thermometers used in-house are calibrated against the standard thermometers yearly.

d. **Calibration Standards:**

The Calibration Standard is directly traceable to SRM 3100 Series Spectrometric Standard Solutions.

### Packaging and Storage Conditions:

The standard is packaged in a pre-cleaned polyethylene bottle. To maintain the integrity of this product, the solution should be kept tightly capped and stored under normal laboratory conditions.

Refer to Material Safety Datasheet (MSDS) for hazardous information.

### Expiration Information:

The expiry date is guaranteed to be valid for eighteen months from the shipping date provided. For this reason, standards from the same lot may have different expiration dates.

Preparation Date: January 11, 2010

Shipped Date:

Expiration Date:

DEC 2011

*Vanny T. Yib*

Vanny T. Yib, Inorganic Laboratory Manager

*Connie Hayes*

Connie Hayes, Quality Manager

*Theodore C. Rains*

Theodore Rains, PhD, Laboratory Director

March 9, 2010

Certificate Issue Date

NOTICE: HPS products are intended for laboratory use only. All products should be handled and used by trained professional personnel. The responsibility for the safe handling and use of these products rests solely with the buyer and/or user. The data and information as stated was furnished by the manufacturer of the product. The information provided in this certificate pertains only to the lot number specified. None of the information provided in this certificate may be used, reproduced or transmitted in any form or by any means without written approval from High Purity Standards.

Lot No.: 1001119

Rev. No.: 2.0.1

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# SPEXertificate®

## Certificate of Reference Material



**Catalog Number:** PLHG4-2X/2Y/2T

**Lot No.** 16-81HG

**Description:** 1000 mg/L Mercury

**Matrix:** 10% HNO<sub>3</sub>

This ASSURANCE® Certified Reference Material, CRM, is intended primarily for use as a calibration standard or quality control standard for inorganic spectroscopic instrumentation such as ICP-OES, DCP, AA, ICP-MS, and XRF. It can be employed in USEPA, ASTM and other methods relevant to the certified properties listed below.

**Certified Value:** 1003 mg/L

**Uncertainty Associated with Measurement:** ±3 mg/L

**Certified Value is Traceable to:** 3133\*

\* - indicates NIST SRM

† - indicates SPEX CertiPrep CRM (when NIST SRM is not available)

The CRM is prepared gravimetrically using high purity Mercury Metal, Lot# 07071A. The certified value listed is the average of values obtained by classical wet assay and ICP spectrometer analysis.

Refer to side 2 for details of measurement uncertainties.

**Classical Wet Assay:** 1003 mg/L

**Method:** Titration with Ammonium Thiocyanate using Ferric Nitrate as indicator.

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**Instrumental Analysis by ICP Spectrometer:** 1002 mg/L

**Uncertified Properties**

**Density:** 1.049 g/mL @ 20.0°C

**Trace Metallic Impurities in the Actual Solution via ICP/ICP-MS Analysis:**

Element	mg/L	Element	mg/L	Element	mg/L	Element	mg/L	Element	mg/L	Element	mg/L
Ag	<0.003	Bi	<0.001	Fe	0.02	Mn	0.001	Rb	<0.001	Tl	<0.05
Al	<0.03	Ca	0.05	Ga	0.002	Mo	<0.005	Re	<0.001	Tl	<0.05
As	<0.05	Cd	<0.03	In	<0.001	Na	0.03	Sb	<0.003	V	<0.009
B	<0.05	Co	<0.002	K	<0.02	Ni	<0.002	Si	<0.1	Zn	0.01
Ba	<0.001	Cr	<0.01	Li	<0.01	Pb	0.1	Sr	<0.001	Zr	<0.002
Be	<0.03	Cu	0.01	Mg	<0.02						

Balances are calibrated regularly with weight sets traceable to NIST #32856, #32857 and others. This CRM is guaranteed stable and accurate to +/- 0.5% of the certified value. This includes uncertainty components due to preparation, homogeneity by the most precise method, short term and long term stability as well as transpiration loss. This guarantee is valid for a period of one year from the date of certification only when the material is kept tightly closed and stored under ambient laboratory conditions.

**Date of Certification:** APR 2011

**Certifying Officer:** vanaja Sivakumar

# Report of Certification

This Certified Reference Material (CRM) has been prepared and certified under an ISO 9001:2000, ISO 17025:2005, and ISO Guide 34:2000 quality system consistent with the following quality standards:

- Guide To The Expression Of Uncertainty In Measurement 1997
- EURACHEM/CITAC Guide: Quantifying Uncertainty in Analytical Measurement – Second Edition
- ASTM Guide D6362-98
- NIST Technical Note 1297
- ISO 17025:2005: General Requirements for the Competence of Testing and Calibration Laboratories – Certified by A2LA
- ISO Guide 31:2000: Reference Materials – Contents of Certificates and Labels
- ISO Guide 34:2000: General Requirements for the Competence of Reference Material Producers – Certified by A2LA
- ILAC-G12-2000: Guidelines for the requirements for the competence of reference materials producers
- ISO/REMCO N280
- Compliant with 10CFR50, Appendix B as applied to Chemicals & Reagents (NRC)
- Compliant with 10CFR21, Reporting of Defects and Non-compliance (NRC)

## Material Source:

All analytes and matrix materials are obtained and verified by SPEX CertiPrep from pre-qualified vendors as per ISO 9001:2000, ISO 17025:2005, and ISO Guide 34:2000 guidelines. Vendor identifications are proprietary, however sources of all materials used in the preparation and testing of SPEX CertiPrep CRMs are tracked and documented. For further assistance, please contact the Sales Support Department at [crmsales@spexcsp.com](mailto:crmsales@spexcsp.com).

## Instructions for Use:

Primary usage of this CRM is in neat form or diluted serially with matrix of a purity at or greater than the purity of the original matrix solution. If dilution is required the diluent must be compatible with all certified analytes and contain stabilizers appropriate for the period of intended use. The CRM can also be used as a spike or with a spike, again with appropriate compatibility considerations. All solutions should be thoroughly mixed, by shaking, prior to use and never pipetted directly from the bottle. All surfaces that come in contact with the solution must be thoroughly cleaned and leached prior to use. Dilutions should be performed only with Class A volumetric glassware.

## Method of Preparation:

Clean laboratory procedures and techniques have been used throughout the preparation. All materials, equipment, analytical instrumentation and personnel have been qualified prior to use. The highest purity acids applicable, 18 megohm, double deionized water, acid-leached triple-rinsed bottles (where appropriate), and Class A/calibrated volumetrics have been used in all preparations.

## Homogeneity:

The homogeneity of the CRM has been confirmed by procedures consistent with ISO 17025:2005, ISO Guide 34:2000, and ASTM D6362-98 Appendix X2. Random, replicate samples of the final, packaged material have been analyzed to prove homogeneity in accordance with our internal procedure 4600-HOMOGEN-1A. This is consistent with the intended use of the CRM.

## Statistical Estimator and Confidence Limits:

The certified value 'X' listed on the reverse of this document is at the 95% level of confidence and can be expressed as:

- $X = x \pm U$  where  $x$  = measured value,  $U$  = expanded uncertainty
- $U = k u_c$  where  $k=2$  is the coverage factor at the 95% confidence level
- $u_c$  is obtained by combining the individual element standard uncertainty components  $u_i$ , and  $u_c = \sqrt{\sum u_i^2}$

## Certification Traveler Report:

All certified values reported were derived from the Traveler Report (SPEX CertiPrep's traceability documentation) identified by the lot number of this CRM. For further assistance, please contact the Sales Support Department at [crmsales@spexcsp.com](mailto:crmsales@spexcsp.com).

## Legal Notice:

SPEX CertiPrep reference materials are not for any cosmetic, drug or household application and are to be used only by qualified individuals who are trained in appropriate procedures. No claims against SPEX CertiPrep, Inc. of any kind whatsoever, whether based on breach of warranty, alleged negligence, or otherwise, with respect to this Reference Material shall be greater than the purchase price. In no event shall SPEX CertiPrep, Inc. be liable for any loss of profits or any incidental, special, or consequential damages.

**SPEX CertiPrep.**

Your Science Is Our Passion.™

203 Norcross Ave, Metuchen, NJ 08840  
[www.spexcsp.com](http://www.spexcsp.com) • E-mail: [crmsales@spexcsp.com](mailto:crmsales@spexcsp.com)  
Phone: 1-800-LAB-SPEX • Fax: 732-603-9647

